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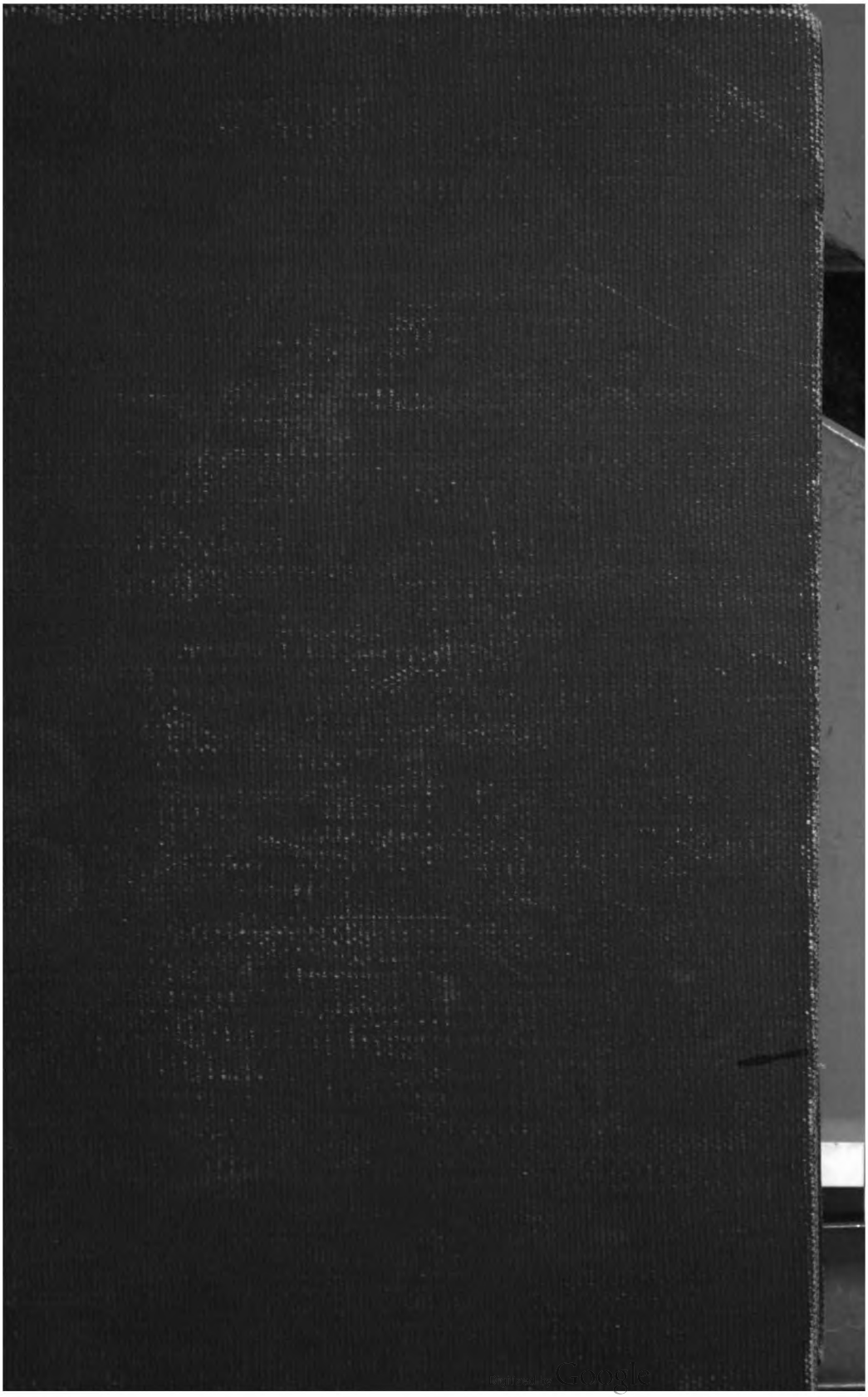
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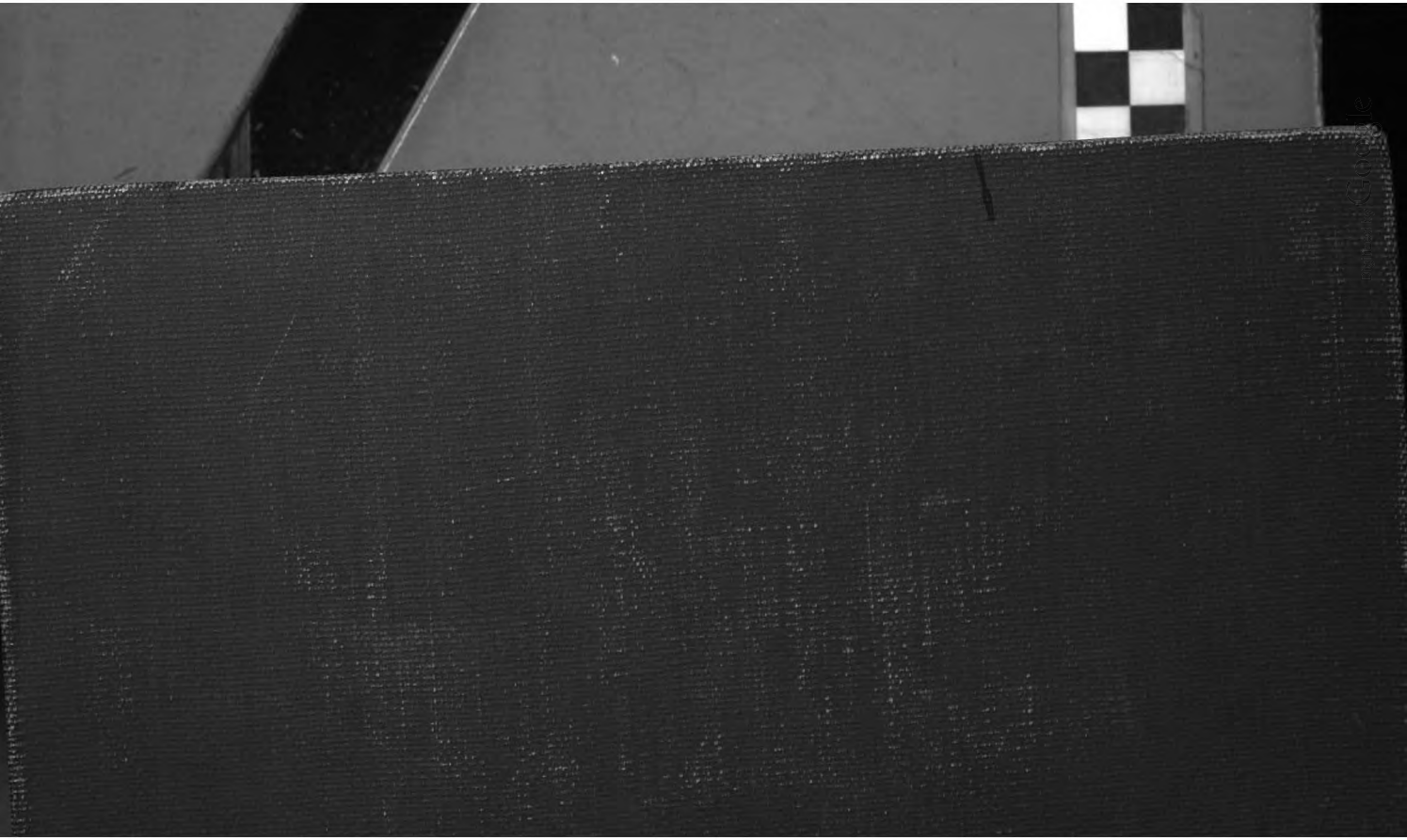

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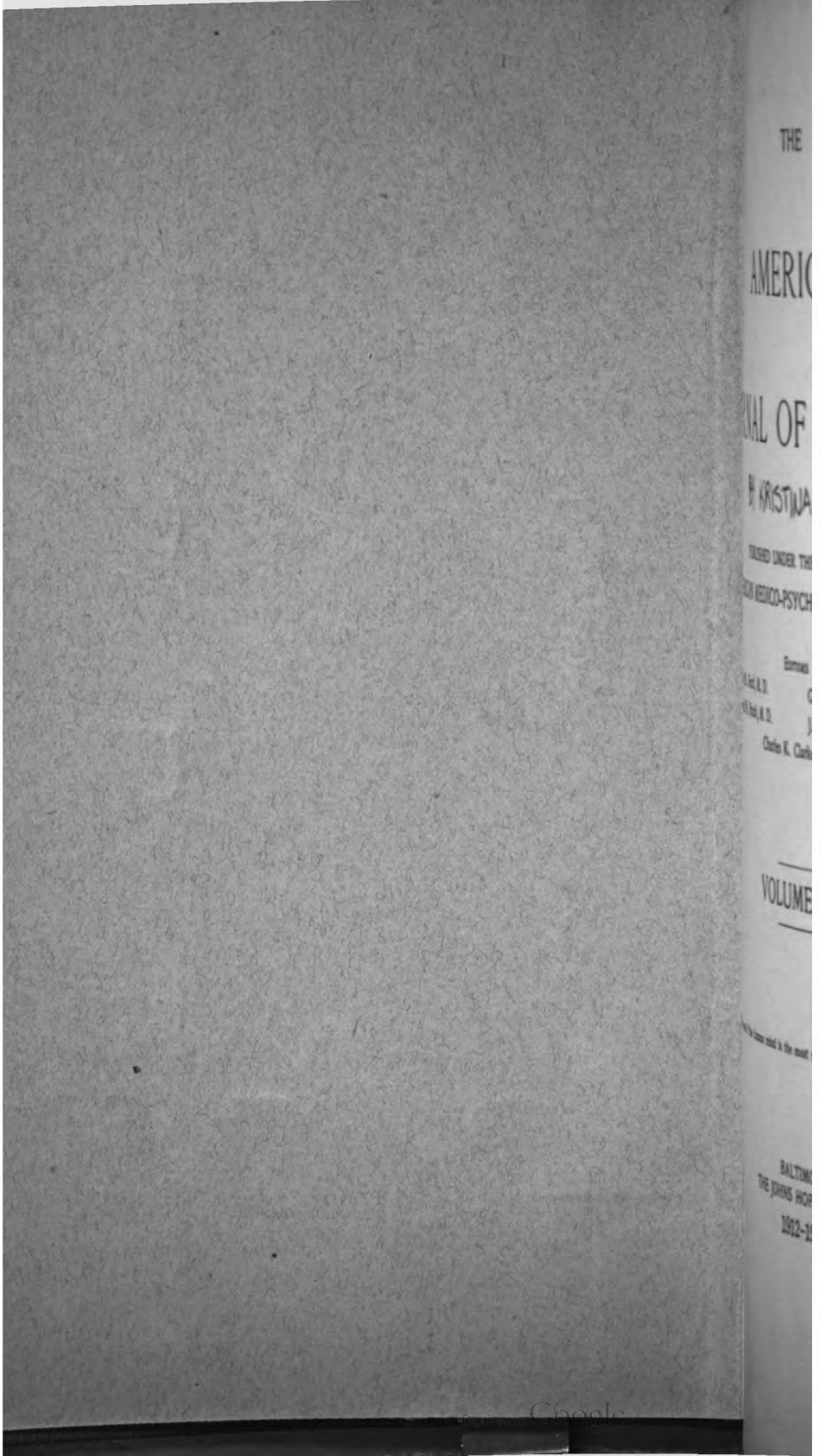

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THE

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BY KRISTINA A. MEIER, M.D.

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VOLUME LXIX

"The care of the human mind is the most noble branch of medicine."—GROTIUS

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VOLUME LXIX JULY, 1912 No. 1

AMERICAN JOURNAL OF INSANITY

THE SOCIOLOGIC ASPECT OF INSANITY AND ALLIED DEFECTS.*

BY HUBERT WORK, M. D., PUEBLO, COLO.

Assuming that the human family, as we know it, has evolved from the ape, or at least from a more primitive type of man, whose methods of procuring food were less complicated than ours, it becomes evident that such evolution must have been impossible unless defectives had been allowed to perish and the stronger perpetuate the species.

With the refinements of intellectual development came as its crowning glory the ethical sense, prompting us to protect each other, especially the weakling. He is, therefore, no longer allowed to perish but is matured in charity, to perpetuate his defects, incapable of personal control, much less self-support. Our high intellectual development has devised means of keeping alive a defective type of humanity which has already impressed itself upon the race, as 4% of our children to-day are feeble-minded with a larger unknown proportion defective to a lesser degree.

It is no longer sufficient to boast of the high evolution attained, and quarrel about how it began, but we must go farther and discuss methods to prevent a reversion towards the original type, whether the first cause was an ape, an atom, or an edict.

The term "Feeble-minded" was devised by Americans to include the imbecile, who differs from the insane in that he has neither delusions nor lucid intervals; an anti-social being, but of many grades of intelligence. It also includes the idiot who is

* President's annual address at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, May 28-31, 1912.

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without mind, consequently extra-social, because fatuous. Both these multi-defective beings resemble our conception of primitive man. No really feeble-minded person ever was or ever will be cured, differing in this respect from the insane, who, because once normal, may recover that which they lost, while the feeble-minded can never recover nor transmit that which they never had.

Under the guise of charity we are undergoing reversion, a term we may no longer use within hearing of the followers of Mendel; although they use it in explaining that it does not exist, claiming that the feeble-minded are not reversions but recessives, or the result of poisoning, notably by alcohol; that primitive man was not feeble-minded nor is the ape; neglecting, however, to explain away the predominance of animal characteristics in the three types as against the physical uniformity and ethical control of normal man, except to say that the feeble-minded are such through failure to develop completely.

It is not the purpose of the present moment to weave theories or to cut garments to fit obvious facts from theories already woven. I prefer to deal directly with conditions at hand; the sociologic aspect of insanity and its allied defects.

To quote Kraepelin: "We must, therefore, regard statistics of heredity in insanity merely as facts of experience without finding in them the expression of a 'law' which should hold in every case."

Applied eugenics mean, to-day, that we must advise against the perpetuation of known defects of mind, whether inherited or acquired, simply because

> "The soul of all improvement
> Is the improvement of the soul."

If excuse for our interest in preventive psychiatry were necessary, I might quote Oliver Wendell Holmes who said "the development of a boy should begin with his grandfather," and the attention of taxpayers might be enlisted by reciting that the single state of New York now has an insane population in hospitals and almshouses of 33,000 patients, maintained at an annual expense of $8,000,000.

During the past ten years New York has spent for the care of the insane, $54,000,000. About one-sixth of its total expenditure

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is for the care of the insane. It equals an annual tax of 70 cents on every man, woman and child of that state.

The estimated annual cost of this class in the United States is $64,000,000 for care only. When there is added to this the expenses incident to adjudications and transportation, together with the economic loss to families impoverished by the care of a defective member with the impaired efficiency of those returned home not fully restored, it becomes clear that the insanity of our people by direct tax and by indirect depreciation of these threads in the social woof, is at once our greatest financial burden and sociologic menace.

It is time we knew where they are coming from; our 300,000 insane and feeble-minded; our 160,000 blind and deaf, our 2,000,000 that are annually cared for in hospitals and homes; our 80,000 prisoners and the thousands of criminals not in prison and our 100,000 paupers in almshouses and out.

To me, this is the new world for us to aid in conquering; a world of the unreal, peopled by those who forget yesterday, do not anticipate tomorrow, but are the children of a day.

It may be said of this association, the oldest and largest American organization of men in special work, that its scientific excursions into new fields of medical research have been as frequent and as fruitful as those in other lines of practice in medication, nursing and housing of the sick.

Our laboratories are fully equipped and our investigators are equally alert. In the physical care of the congregated sick we are masters in medicine. Neither is it too much to say that we are better qualified, through more modern facilities, to obtain results than our European brothers are.

Dr. Orpheus Everts, now deceased, once a distinguished member of this association, twenty-five years ago, said:

> Already the hill-tops of science are luminous, and men of intelligence and learning no longer dwell in an atmosphere of gloom peopled with imaginary beings, gods and demons, standing in the relation of invisible causes to all visible effects; but moving ever on and up toward the greater light, realize the fact, that with every step taken vision becomes clearer and more comprehensive, and that positions may be occupied to-day with safety that but yesterday seemed to be dangerous, if not inaccessible.

This prophecy has been fulfilled. We *have* advanced scientifically to a position in the medical world hardly thought of twenty-

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five years ago, so that our qualifications have added responsibilities and opened to us new fields.

Indeed, we have already sent out pioneers. The American Breeders Association has organized a Commission of Eugenics consisting of David Starr Jordan, Alexander Graham Bell, Luther Burbank, Adolf Meyer, et al. Its sub-commission on insanity is officered by Adolf Meyer as chairman and E. E. Southard, as secretary, both valued members of this association, with whom collaboration would be a distinction.

Our improved methods of caring for the insane contribute to an increase of the by-product of the human family. The lives of the incurable are immeasurably prolonged. The improvable are promptly returned home to reproduce their kind. Many of you superintendents have admitted the defective child of a restored patient discharged years before, whereas a century since the parent would have been destroyed by his malady and his line cut off.

"The recovered" insane in most instances mean merely "not dangerous" and their offspring are in constant peril.

As a people we have refused to hide behind the hint:

> "Thou shalt not kill but needs't not strive
> Officiously to keep alive."

Normal boys strive for existence, often perishing through the exactions of the strife; their fatuous brothers are protected and reared to beget half-wits.

Although statistics teach much, they are tiresome also, and I need only recall that approximately 65% of the insane are such through heredity, 15% from alcoholism and drug addiction, the predisposition to which is from parents, not themselves necessarily inebriates, but of abnormal mentality, 10% are incapacitated from syphilis either inherited or acquired, the remaining 10% from senility and other causes; 75%, in fact, will not cover all forms of intellectual defect due to heredity. We have then a total of 90% from avoidable if not preventable causes, under our liberal form of government, altruistic in theory and stimulating in practice to those who need not the law, but failing dismally to distinguish between a liberty of action that encourages uplift, and a license that results in degenerate offspring, entailing a money tax on

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clean living people, moral degradation to those in contact with them and inevitable depreciation of the human fabric.

Humanitarians estimate the toll exacted by the "White Plague," in dollars, through deaths and loss of efficiency. Much publicity is given the subject, societies are formed, the public informed, marriage of the infected advised against, millions of dollars thrown into endowment funds for the study of it and into hospitals for sick care: meanwhile the silent multiplication of deteriorates is permitted in every state and encouraged in some, through contact in almshouses of both sexes. To my personal knowledge a supervisor of the poor in Pennsylvania induced a feeble-minded man to marry an imbecile woman with a brood of defective children of many fathers; doubtless proud that he had legitimized an entire family, present and to come, incidentally shifting a financial burden to the next county, with seed to found families; possibly rivaling the notorious Jukes of criminal literature.

If two imbeciles marry, the offspring are all imbeciles, while their ability to procreate is attested by the marriage of a feeble-minded man of 38 to a delicate wife and twenty years later he was the father of nineteen imbecile children.

Dr. Johnstone found that feeble-minded women are nearly twice as prolific as normal females. Dr. Kiernan's investigations of ninety degenerate families disclosed the average number of children to be eleven, also that multiple births occurred ten times more frequently than in the general population. Davenport could find no case on record in which two imbecile parents have produced a normal child.

Much as a decaying tree will bear fruit abundantly but leaves sparingly, blighted nature attempts to perpetuate its kind through seed, at the same time exhausting its vitality.

Whether or not genius is born and not made, we do know that these human misfits are recessive determinates.

The influences of heredity and environment are usually interwoven so that the hoary discussions of their relative bearing will not end in our time and need not distract us from discussing what we definitely know of the former.

Dr. Robertson uses the genealogy, prepared by Dugdale in 1873, of one drunken, worthless vagabond, born about 1720, as a com-

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parison with that of the Edwards family to further strengthen the established belief in heredity.

Twelve hundred descendants were traced as having been inmates of penal and charitable institutions previous to 1874, a period of 100 years. None of them was at any time of any value to their communities, 310 were in poorhouses a total of 2300 years, 300 died in childhood, 440 suffered from the diseases of vice, 400 were early wrecked by vices, 50 were notorious prostitutes, 7 murderers, 60 habitual thieves who spent an average of 12 years each in prison, 130 were frequently convicted of lesser crimes.

Surely "Nature is subdued to what it works in,
—like the dyer's hand."

For purposes of comparison: Jonathan Edwards was born in 1703; 1394 of his descendants were identified in 1900, of whom 295 were college graduates; 13 presidents of our greatest colleges; 65 professors in colleges, besides many principals of other important educational institutions; 60 physicians, many of whom were eminent; 100 clergymen, missionaries or theological professors; 75 were officers in the navy or army; 60 prominent authors and writers, by whom 135 books of merit were written and published and 18 periodicals edited; 33 American states, several foreign countries and 92 American cities and villages profited by their beneficent activity; 100 were lawyers; 30 were judges; 80 held public office, one of whom was Vice-President; and 3 United States senators. It is not known that any one of them was ever convicted of a crime.

It is unnecessary for us to establish a premise and reason from cause to effect. We have the patent result in our defective classes at hand and may make the easier progress backwards in this study —definite conclusions from established facts rather than conjecture from doubtful premise.

Animals maintain the strength of species by mastery over their weaklings. Our civilization sympathizes with and protects physical weakness. Moreover, with higher "civilization" and consequent greater instability, a higher proportion of degeneracy obtains.

Half a century ago about 400,000 of our best men perished in the war between the states. Those less vigorous were left at

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home to become fathers. Our reunited states have been phenomenally prosperous, but nothing fails like success when applied to nations, because it means the indiscriminate survival, more particularly of those who would perish through exigencies of want, and the units of government are thus depreciated by a leaven of mediocrity.

Whether Rome fell through brutality of its sports, the protection of its pauper class, wars, tyrants, tax gatherers, admixture of races, malaria, or a combination of these, does not concern us. We need not look so far back for what threatens the United States now.

The unlicensed transmission to offspring of incurable mental and physical defects will in time encompass our decadence.

Race suicide has already attracted alarmed attention from political economists of this and older nations. Doubtless this crime has received impetus from the unwillingness of disease-tainted parents to impart defects to offspring.

Some sort of protection against the sane with neuro-pathic taint or acquired disease who insist upon marriage, must be thought out. Laws should be framed to punish a man who marries and infects innocent womanhood. Our moral sense would applaud any expedient short of murder which promises immunity from conjugal infection to the pure wife, or the maternal anguish of having borne a disease-corroded child.

It seems idle to multiply proofs on a subject agreed upon by scientists, or to bring up the allied branch of crime and its cost in lives and money, for the first causes are the same and the certainty of hereditary taint is the same.

Psychologically the lines of descent diverge towards imbecility, insanity, pauperism and crime. Sociologically they converge towards institutions for public support of the criminal and mental incompetent—to their seclusion from the world because they cannot become a part of it.

All this to you men is elementary and its repetition would not be justified were it not true that the human family is the victim of an insidious blight which threatens its destruction, a malady we have elected to study and treat, but which as an organization we have neglected until states have initiated measures independent of us.

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Much has been said against the marriage of the unfit. Acts have been framed and a few laws have been enacted only to prove futile except so far as such discussions tend to direct the public mind to a matter of national moment—the breeding of the highest type of humanity by eliminating the unfit.

Recognizing the failure of enactments to reach individual cases and to prevent the propagation of defectives, a few states have authorized the sterilization of men and women unfit to procreate the average type of humanity.

The members of this association as individual authorities should help their several states and provinces in a survey of their own children, to measure their defects, to estimate what kind of citizens they are growing and to urge legal enactments intended to limit the generation of feeble-minded, insane, epileptics, syphilitics and criminals.

That the descendants of one man, born about 1720, cost New York state $1,200,000 in 75 years, shows how slowly society takes scientific cognizance of itself, for these statistics by Dugdale were not seriously considered; only recently were they resurrected by the Carnegie Institution which promises to trace this derelict family and compute its cost to the public to date.

Ten years ago an attempt was made to estimate the proportion of insane, idiots and imbeciles in the Canton of Berne, Switzerland. It was found to be 1 in 117 in the general population.

One defective Swiss woman cost her government $1,250,000 through her 707 traced descendants. Of these 106 were born out of wedlock; 142 were beggars; and 64 lived on charity. Among the women, 181 were immoral; 76 were convicts; and 7 murderers, suggesting that the hand which "wrecks" the cradle rules the world.

Were the regulation of marriages possible it would not be effective in limiting the curse of feeble-mindedness and its drunken, criminal, lunatic spawn, for marital rights are not essential to procreation and the moral sense is wanting in the imbecile.

Apparently there are but two remedies for this social pollution. The segregation of the abnormal at puberty by holding them in institutions during their procreative period, or rendering them sterile.

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Segregation has been attempted for a hundred years with the practical result that insanity has increased 25% while the whole population has increased 11% to say nothing of an annual, direct, increasing tax on the people of millions of dollars. This alone is proof of its failure, not to mention a greater public expense for its congeners, the criminal and pauper classes.

We are then perforce compelled to invoke the alternative of sterilization. Accepting this dictum as established, two difficulties present themselves:

1. Where shall the line be drawn?

2. The surgical procedure.

The high-grade imbecile of the public schools is a source of danger because passing in society as normal—a uni-defective, therefore, not under surveillance—often, indeed, petted and pushed forward because of precocity in a single attribute of mind—the flaming of a spark of genius fed by the combustion of cerebral energy diverted from mental attributes not developed, or stimulated by precocity the precursor of premature disintegration. This remote type socially protected from law enforcement will not become amenable to legal inspection or control.

Broadly stated, then, those who would come within the scope of the state's authority to sterilize should be those for whom it becomes a guardian because of mental defect, or for crime, or both; those who, if allowed to produce offspring, would beget children mentally enfeebled, incapable of self-support or self-government.

The laws of heredity are definite enough and sufficiently well understood to guarantee that no injustice need be feared. If an apparently normal child *should* appear in a neuro-pathic family the mental stain may be confidently expected in the first or second generation following him.

Criminologists believe that there is no criminal type but that an instability of the nervous system is the basis of habitual crime, the same nervous instability, if you please, which lies back of all abnormal functional cerebration.

Mindful that punishment has failed to greatly lessen crime may we not hope that with the knowledge of the increasing burden from these enemies of public polity, society will welcome measures looking more to the extinction of the criminal degenerate than to

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his reformation in the light of what has been accomplished by ages of penal enactment.

Unfortunately sterilization, when first practised, was done by castration necessitating mutilation with loss of structure which is associated in the public mind with punishment. In lay-discussion of this subject the fact should be kept prominent that the operation must never be advised as a punitive measure but invoked only as a quarantine expedient, precisely as the infected are prevented from contaminating the well. Imbecility is not a crime *per se* although its propagation should be so designated.

Dr. Sharp, of Indianapolis, has said:

> It can readily be seen that one subjected to castration would in all probability become morose and downcast on account of the deformity alone. Besides, the testicle has a double function, that of providing an internal as well as an external secretion, and the organism cannot maintain a normal condition when robbed of this internal secretion. This is manifested by the perceptible change in the eunuch.
>
> This operation is very simple and easy to perform. I do it without administering an anesthetic either general or local. It requires about three minutes' time to perform the operation and the subject returns to his work immediately, suffering no inconvenience, and is in no way hampered in his pursuit of life, liberty and happiness, *but* is effectively sterilized.

Dr. Sharp had been doing this operation for over ten years, operating upon 456 cases in all. He has had a splendid opportunity for postoperative observation and has never seen any unfavorable symptoms.

All other methods proposed place restrictions, and, therefore, punishment on the subject; this method does not. There is no expense to the state, no sorrow or shame to the friends of the individual, as there is bound to be in segregation.

More recently surgery has demonstrated that the proximal end of the vas should be left patulous for the discharge of testicular secretion, the distal end being crushed. *Fallectomy* is practised upon the female for the same conditions and with equal success.

Objections to sterilization will continue to be raised in the name of "personal liberty" by those who think they think, using words as children do blocks instead of facts upon which to establish theories.

Does the feeble-minded prostitute of the streets have any liberty?—harassed by peace officers in preserving the semblance

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of public decency and hounded by low men and boys, starved, diseased and deserted. There be neither life, liberty nor pursuit of happiness for this hand-maiden of illegitimacy except through the espionage of a wholesome public mind.

We are all derived from the society of the past and will pass into the society of the future. For these reasons the society of to-day has the right to inquire into our personal defects, to learn whence they came and through this knowledge to protect posterity.

I know of no more rational answer to this abstract question than that elicited by a personal application. Who of us having a defective child would not answer the last call more cheerfully, knowing that our living sorrow was left incapable of producing nondescript offspring to perpetuate the family name through generations of defectives?

Pennsylvania, through its General Assembly of 1905, passed an act which its governor refused to sign, which sought to legalize human sterilization. Again, in 1911, a similar act was introduced, but failed to become a law.

In 1906 the Legislature of Wisconsin discussed a sterilization bill but postponed it pending an investigation regarding the mental defectives of the state.

In 1908 the state of Oregon passed a sterilization act which its governor vetoed; so a law was passed nullifying his prerogative in this respect.

In 1910 a bill for sterilization was introduced into the Ontario (Canada) Parliament which was talked out of it by the Prime Minister.

The histories of these failures to enact laws uniformly show the governor to be the objector. Let us not urge this fact as an additional argument in favor of limiting the legislative prerogatives of the feeble-minded, also!

However, these agitations and discussions were not without result. In 1907 Indiana enacted such a law. Iowa, Oregon, Utah, Connecticut and California have sterilization laws of liberal scope.

As evidence that the ranks of the pauper class are enormously augmented by the feeble-minded, Dr. Rentoul, of Liverpool, cites the instance of 5 feeble-minded women who gave birth to 15 feeble-minded children, and quotes Dr. Pott's figures concerning

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16 feeble-minded women in one English almshouse who gave birth to 116 idiot children, while the 1905 report on Inebriate Homes in England states that 92 habitual inebriate women had given birth to 850 children.

Feeble-mindedness is relatively infrequent as an accident of birth or infantile illness but is usually a definite inheritance. The more inebriates the more degenerates and conversely, the more mental defectives the more inebriates and paupers, forming a vicious circle from which there seems no escape except through sterilization.

It is quite possible for parents with normal faculties, through dissipation, vice or disease, to produce deteriorated children, but there is no method by which the tendency can be reversed. Degeneration is invited by refinements of organization. Regeneration of the mind cannot be effected with parts of the mechanism necessary to generate mind destroyed.

In his annual report under the head of Preventive Eugenics, the word painter pre-eminent of this association entered a plea for the nervous temperament which often displays eccentric originalities which amuse us. The nervous diathesis does not predispose to insanity nor indicate it except it be surface play from a tainted ancestor. The power of fancy over reason is not an exclusive attribute of this temperament but dominates the immature in mind as well. Collapse of the nervous diathesis is invited by its intensity and is acute—a functional sequel of over-strain—the wrecking of the prodigy that entertained us momentarily. Arguments favoring unrestricted propagation are based on the fear that the world might lose a genius. Single talent genius that springs from defective families is the ignis-fatuus of a night, a light from the social slough—its ancestry in doubt and leaving no posterity, although itself of passing brilliancy. Gratifying as may be the restoration of a patient wrecked through nervous diathesis and delightful as the contemplation of warped fancy may be to those who revel in the unusual, an amused tolerance of those with "brain cracks" is far from the mark we should set to obviate their birth.

The permanency of a nation is dependent upon its physical ethics. The traditions of our government for centuries past have been bound about by religious restraints more than now, many of

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them superstitions possibly, but withal deterrent to prostitutions of the body. The limitations they imposed inured to healthy offspring with balanced minds and in turn healthy morals; a psychologic cycle, the evolving antithesis of the vicious cycle of degenerate mentality. The relaxation of the fundamental teachings of the last generation contributes to mental instability, since the first essential to integrity of mental processes is that the mind should be anchored to something which it regarded as established. At the time when didactic instructions in morals were daily mental gymnastics of children the nervous diathesis was called hysteria and treated by "laying on of hands." "Nerves" is a modern term not found in the nomenclature of the Pilgrims.

A feature of imbecility not emphasized by humanitarians is the physical suffering entailed throughout life to the individual. Mental weakness implies low vitality with invited disease and chronic invalidism, the prevention of which is legitimate.

That imbecility should be "let alone," that "nature will purify itself as the stream does," that "the fittest will survive," and like fallacies are controverted by the knowledge that contaminated nature has diminished power of purification, and that the stream of human generation is being constantly defiled by polluted springs.

Philanthropic persons, boards and associations are being aroused. The word eugenics has a new meaning, because of the unvoiced complaint of 20,000 feeble-minded children confined in institutions, 1400 being added each year while 100,000 wait in want without, deprived of ethical sense, perpetuating their kind with more license than is permitted to animals.

New York State through its Charities Aid Association has issued an appeal through thousands of pamphlets entitled "Why Should Any One Go Insane?" with circular letters asking cooperation. While an out-patient department has been instituted at the Long Island State Hospital, a new Psychopathic Hospital has been opened at Syracuse, one is promised at Kings County Hospital and another at the new Gouverneur Hospital in New York City, thus attempting to stay borderline cases and prevent the dethronement of wavering minds in those who should never have been born.

Prophylactic psychiatry is no new thing and I beg of this association to divert at least a modicum of the energy devoted to the

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care of the unhappy people brought to us for treatment, to teachings that may prevent their coming in ever-increasing numbers. It is not possible for the normal mind in a healthy body to become insane and I am not in harmony with the statistician who argues because the total population of the United States has increased about 11% in the past six years, and the number of insane has been augmented during the same period by 25%, that *a priori*, in 300 years all will be insane.

If the highest test of sanity be "the ability to adapt self to environment," the American people as a whole are more sane to-day than before in history. Although the per cent of insanity per thousand has increased, the relative sanity of the body politic has been raised and will very soon direct itself against its antithesis, insanity.

The multiplying of the defective classes is the largest sociologic problem before the American people which must very soon invite the attention of our government, from the cabinet officer to the township trustee. Logically they will look first to this association for matured advice and suggestions for procedure, after the census bureau has compiled the figures and public conscience has compelled attention.

The country owes it to itself as a matter of self-preservation that every imbecile of productive age should be held in such restraint that reproduction is out of the question. This having proven impracticable through institutional seclusion, because of expense and the interference of relatives, then sterilization is necessary. Where the life of the state is threatened extreme measures may and must be taken.

The sentiment, nation-wide, which instantly came to the support of Dr. Wiley in his efforts to protect our people against food and drug adulterations: the national sentiment against the poison of alcohol; the education of public school children in hygiene—literally meaning their warning against diseases; all may be relied upon to aid us in a fight against adulteration of the human mind against the poison of vicious inheritance, against the perpetuation of degeneracy, to the economic loss of average efficiency of the nation.

The new science of medicine dealing with vaccine therapy, recognizing the mosquito and common house-fly (with the sand-fly

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under suspicion), as carriers of the common diseases, which has rendered diphtheria, typhoid, rabies and small-pox preventable, with other medical triumphs tediously numerous, leaves the field of preventive psychiatry isolated, as though the old belief obtained, that it is the domain of evil spirits which we fear to enter.

Our national prosperity largely due to its climate, religious freedom and virgin soil has enabled us to carry the financial burden and social curse of feeble-mindedness amazingly well but:

> "Ill fares the land to hastening ills a prey,
> Where wealth accumulates and men decay."

Our dangers from unfriendly nations are minimized by the greater danger that we may impoverish ourselves by taxation for the support of our mental derelicts, by direct enfeeblement of individuals with indirect national inefficiency, against which our attitude as superintendents must be that of physicians, alienists, political economists, sociologists and through it all humanitarians.

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FURTHER OBSERVATIONS ON ALZHEIMER'S DISEASE.*

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One of us has recently described what we believe to be the 8th recorded case of so-called Alzheimer's disease,[1] that is, certain histopathological alterations of the brain indicative of senile involution associated with clinical symptoms such as are exhibited in the severest form of senile dementia, but appearing in comparatively young persons. Included among the clinical symptoms are phenomena suggestive of coarse focal lesions of the brain—aphasic and apractic disturbances—which have not been accounted for by coarse focal lesions at autopsy.

For purposes of comparison there were added to the report of the first Westborough case the clinical histories of all cases then known to us, 10 from foreign literature and 2 from American sources, together with a critical analysis of these histories and their associated anatomical findings. It was shown that despite certain basic characteristics, more or less present in all of the cases, essential differences existed which precluded for the present any dogmatic statement as to the exact clinical grouping of these cases, as well as any claim for a definite gross or histopathological anatomy. Nevertheless, in so far as one may be justified in correlating anatomical changes with clinical symptoms, there is much in the finer anatomy as a whole to indicate a psychosis dependent in a great degree upon involutional changes in the brain and blood vascular apparatus, while the clinical histories offer many features which we are accustomed to associate with senile mental disorders.

The first case of Alzheimer's disease to be recognized as such at Westborough was, clinically and anatomically, quite comparable to the first case reported by Alzheimer[2] and the group of cases

* Presented in abstract at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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later collected and published by Perusini.[3] The case which forms the subject of this communication did not exhibit anatomically the peculiar type of intracellular neurofibril alteration common to the majority of reported cases, and in this respect is like Alzheimer's second case,[4] the only other to our knowledge in which the basket-like appearance of many ganglion cells was wanting. So-called senile plaques while present were neither large nor numerous, and differed slightly in structure from plaques as usually described, but exhibited among themselves a great degree of uniformity. Moreover, the mode of onset and much of the clinical course suggest that certain exogenous toxic factors, which as a rule we do not link with the exciting or even the predisposing causes of senile psychosis, are, perhaps, more frequently operative than has been supposed.

Before going on to the history of this case we quote from the paper referred to above[1] a brief summary of the leading clinical features of all of the cases as revealed by the literature: "About middle life or slightly past, with one exception where the onset was in early adult life, memory defect, disturbance of retention and general mental weakening set in and progress to a marked dementia, in some of the cases slowly, in others rapidly. Early in the course of the affection aphasic disturbances—verbal amnesia, occasional paraphasia and jargon, impairment of ability to comprehend spoken language, graphic disturbances, verbal and literal perseveration—ideational apraxias and agnosias develop, varying from time to time in severity, but never as intense or consistent as the speech disturbances and apraxias originating from coarse focal lesions of the brain. Mental confusion with some delirium, lack of bladder and rectal control * without evidence of limb paralyses, good preservation of gross muscular strength, considerable motor activity and general restlessness have been striking features of the majority of the cases. Auditory and visual hallucinations with apprehensive delusions based upon them and spatial as well as temporal disorientation have been, in instances, likewise characteristic. Disturbances of the motor projection paths were slight or absent; if occurring at all usually appeared late, even then were

* Not necessarily the result of paralyses, but rather the untidiness that is commonly associated with confused states and marked dementia.

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often transitory. In a few instances motor disturbances have been noted as residua of epileptiform convulsions. Convulsions with loss of consciousness, with one exception,† have not been observed save in the terminal stage, epileptiform attacks and muscular twitchings being recorded. With exception of Case II, luetic infection does not appear in the anamneses. Alcoholic indulgence while mentioned as moderate in Cases VI and VIII and pronounced in II and VII seems to have played no rôle, or, at most, a minor one."

So far as we are aware, these still remain the salient clinical features of this type of cases. The original anatomical picture, on the other hand, has undergone considerable modification, although preserving the close kinship with the histopathological alterations of senile cerebral involution. The anatomical changes of this atypical senile group together with what may reasonably serve as a criterion for a senile psychosis will be discussed more in detail in the further course of this paper.

The history of the second case of Alzheimer's disease to come to autopsy at Westborough State Hospital is as follows:

No. 9879, a woman of 56 years was admitted to Westborough State Hospital December 10, 1911, on a transfer from the Arlington Health Resort, a private institution for nervous and mental diseases, where she had been a patient since August 8, 1911.

It is reported that throughout life the patient had been of the so-called nervous temperament, quick and sensitive—but until the present illness had usually exercised good self-control. In 1883 while descending a flight of stone stairs she fell, striking the coccyx, and has had soreness in that region ever since. Some 25 years ago she received rather painful injuries in an accident, she was thrown from a moving carriage, sustaining extensive lacerations about the head, one of which nearly severed an ear, and was dragged for a considerable distance over the granite paved blocks of the street. She was unconscious for 27 days after the accident, but no history of paralysis, speech disturbance or amnesias following the occurrence was elicited. During several years thereafter she suffered severe periodical headaches at intervals of about 3 months, the attacks lasting on an average of 3 days and each leaving her quite exhausted physically. In about 3 days after the cessation of the cephalalgia she would regain her usual health. These periodical headaches, however, had long since ceased. In 1909 she had an attack of broncho-pneumonia, said to have been of short duration and from which she made a good recovery, her general health, save for habitual

† The case here reported is also an exception.

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constipation, remaining good until the onset of the present illness, in May, 1911. At that time a particularly malignant streptococcic tonsilitis was prevalent in Boston and its vicinity, a form of tonsilitis which often proved fatal to infected persons over 50. A son-in-law, in whose household the patient lived, and his wife (her daughter) contracted the infection; and our patient undertook their nursing, the care of a young grandchild and the management of the household. After a short while she, too, developed a sore throat which, it appears, was of a milder type. At any rate for the reason of her many responsibilities, her friends state, she did not "give in to it," continuing to care for the sick members of the family and ordering the household affairs.

June 23, 1911, the son-in-law died as the result of the malignant tonsilitis. Almost immediately thereafter the patient developed an articular rheumatism affecting the legs, arms and hands. Even then she did not take to bed, for she was very busy with preparations for changing the residence of the family, most of the work devolving upon her since the daughter though recuperating was still not strong. The arthritis persisted for about a month.

August 1, 1911, she was free from pains in the joints, but was in very poor physical condition and was extremely nervous. For several weeks there had been a progressive asthenia, rapid emaciation and marked insomnia. For about a month although retiring at a late hour she could not sleep after 3 a. m. when, because of the restlessness engendered by the loss of sleep, she would get up and begin the day's work at that hour. Meanwhile in addition to rather vague and general apprehensions she was particularly apprehensive as to the future of her daughter and grandchild, now that their breadwinner and natural protector was gone, an apprehension far in excess of the normal. Always possessing a fear of hospitals of any nature whatsoever, this feeling became accentuated. From her impaired physical condition she concluded that a serious illness was imminent, and there was also a sense of impending death, for she frequently gave directions to her daughter for the disposition of her belongings in case anything happened to her.

August 3, 1911, certain disorders of speech were noted, described by friends as "peculiar." On questioning the relatives it was learned that these speech disturbances resolved themselves into irrelevancy, desultoriness, hesitancy as though groping for the proper words and occasional paraphasia, whereas formerly, a woman of good education, she was a ready talker and possessed the faculty of expressing her thoughts clearly and to the point. Short periods of confusion were also reported in which she did not seem to know what she was about. Memory, too, was rapidly becoming impaired and with all of it there was some depression and self-accusation. She frequently remarked after the death of her son-in-law, "I did not do enough for him, he might have lived had I given him better care," etc. She complained of noises in the head which were described as "like a great rush of water" and was frequently agitated over trifles. During the 3 days prior to being sent away visual and auditory hallucinations developed along with apprehensive delusions based upon them. She would hide

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beneath the bed clothing; cry out in terror that "they" would put her to "the living death," burn her up, etc. She also spoke of hearing "voices from a throng of people," of seeing frightful animals on the bed and walls of the room and begged not to be left alone. During this excited period she was disoriented for time and place, but recognized the members of her family.

August 7, 1911, she was sent to Dr. Ring's Sanatorium, Arlington, where she arrived in a condition of stupor. An hour later she was aroused with difficulty, did not know how long she had been there or where she was. When questioned she replied only with repetition of the question. During the night she became more lucid, but was still disoriented; kept her head beneath the bed clothing, was apprehensive and extremely noisy. She was also actively hallucinated, in the manner as described above. In consequence of her disturbed condition she was removed to the Arlington Health Resort. On arrival at that institution she was still hallucinated and appeared suspicious of her surroundings. She did not sleep during the first night, although she was fairly quiet. The following day she had 3 epileptiform seizures which the physician at that institution was inclined to consider of an hysterical nature. No paralytic phenomena ensued. During the next day alternating periods of confusion and periods of a fair degree of mental clearness are reported, but at night she was very restless and talked a great deal in an incoherent manner.

August 10, 1911. Increased apprehension, especially intensified when left alone; active auditory hallucinations which seemed to form the basis of delusions that men were coming to shoot her. She was very noisy and exhibited considerable motor reproduction.

Gradually, in about 3 weeks, the apprehension and hallucinations diminished, finally disappearing. She developed considerable insight, slept well, enjoyed the visits of relatives, was out of doors most of the day and looked forward to returning home a well person. This improvement, however, was of short duration, less than a week.

One morning she seemed slightly depressed and refused food. During the day she gave evidence of hallucinations, saying that she heard two men in the field talking of killing her, adding that she would not be "shot down like a dog." The old fears and apprehension returned, but she was not as noisy as formerly. She would hide or remain perfectly quiet, and frequently begged to be protected from the torture that was coming to her. She distrusted everyone, including her family, and developed certain ideas of negation, as for example, she had "no husband" "no daughter," "no nothing," etc. She not only refused to recognize her husband and daughter when they visited her, but handled them roughly when they made advances. When they were about to leave her she always wished them to stay longer, even though a few moments before she had said they were nothing to her.

This condition, our informant, Dr. A. H. Ring, states, persisted until the patient left Arlington Health Resort, with addition of increased depression, agitation, refusal of food and some retardation.

When admitted to Westborough State Hospital she was in rather poorly nourished physical condition, and appeared considerably older than her

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stated age (56), gait rather unsteady, but no indication of paralyses of lower extremities. The heart's action was rapid, but regular; no murmurs; prominent and firm temporal and radial arteries; blood pressure (Tycos instrument) 145. Respiratory sounds not pathological; urinalysis revealed a diffuse nephritis; other abdominal viscera negative. There was a perineorrhaphy scar, the uterus small and fixed by adhesions. The skin was sallow, presenting numerous moles, scars on the head and right arm, and the right ear badly mutilated as the result of the old injury.

The pupils reacted promptly to light, she did not coöperate in accommodation tests. Hearing in right ear greatly impaired, almost nil, apparently good in left. Integrity or extent of impairment of smell, taste and tactile sensibility could not be definitely determined for lack of coöperation, but she reacted rather promptly to painful stimuli. There was a rather general coarse tremor, particularly marked of the tongue and fingers. Elbow and wrist reflexes elicited, right K. J. plus, could not elicit left. No clonus; no Babinski; no cranial nerve palsies or any other paralyses; some swaying to Romberg.

The patient was very restless and markedly apprehensive. She did not seem to understand many of the questions asked her, repeating them over and over as though to grasp their meaning, or in a parrot-like manner. Occasionally she gave a prompt and pertinent reply to a question, but usually she employed indiscriminately the following phrases: "Sometimes I do, sometimes I don't," "I don't know, or "that depends." At one time in the course of the interview she said, with an air of great significance, "I comprehend lots of things I don't pretend to know." There was little play of the emotions in her facial expression, except that of terror, and on the whole she imparted the impression of considerable mental dulling.

Orientation was very imperfect. Although at the time of the interview she had been but a few hours in hospital she could not tell how long here, where she had come from, the day of the week or month. She could not give the commonest historical or geographical facts, nor tell how many children she had. Retention was also very poor. She recognized objects shown her and had no difficulty in imitating simple movements. She was entirely without insight into her condition.

For the two weeks following admission she slept poorly, ate but little and cried much of the time. There were periods when she was very noisy, during which she frequently left the bed to wander aimlessly about the ward. The apparent difficulty in comprehending what was said to her still persisted. She always repeated the questions and seldom added a pertinent reply. Spontaneous speech, however, was frequent, although for the most part incoherent and in which there was frequent mention of Arlington and of persons using her mind. She not only acted in a confused manner, but once or twice nodded assent to the question, are you confused? Although frequently confused she had not up to this time soiled the bed or her person with feces or urine.

In the early part of February, about six weeks after admission, she was worse. Although kept in bed she was constantly restless, disarranging the

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bed clothing, or moving her limbs about in aimless manner. She would take but little food and strenuously resisted tube feeding. She was also very resistive to all attempts to do anything with her, the basis of which seemed a fear of all about her. She was even suspicious of the food. She no longer made any attempt to answer questions or to comply with requests, and frequently appeared confused. The content of spontaneous speech was becoming more and more jargonic in character. A Nogouchi test for syphilis was negative.

February 20, 1911, she was noticeably weaker. The heart's action was rapid and irregular and examination of the chest revealed a pleuritis and a developing right lobar pneumonia. She appeared very confused, babbled almost constantly in an unintelligible jargon and was very restless. The only time during a period of several days when she said anything which was intelligible was when the clergyman visited her, she said to him "get out." During the next three days the pneumonic process extended, and now for the first time in hospital she passed urine and feces involuntarily. The stools were diarrhoeic and there was almost constant dribbling of urine. There was swelling and redness of the knee joints and beginning decubitus. The tongue was dry and covered with sordes and she lay abed with mouth wide open, breathing laboredly.

February 24, 1911, death with symptoms of lobar pneumonia and cystitis. Autopsy 14 hours post-mortem.

Anatomical Diagnosis.—Congestion of dura, hernia of Pacchionian granulations through dura, congestion, oedema and regional proliferative leptomeningitis chronica, diffuse atrophy of cerbral gyri, small patch of atheroma in basilar artery, otherwise no macroscopic evidence of cerebral arteriosclerosis; brown atrophy of heart, atheromatous degen. of endothelium of ascending aorta; acute exudative pleuritis, right lobar pneumonia; hepatic congestion; chronic interstitial splenitis; gastritis, acute enteritis; diffuse nephritis, acute cystitis.

The brain weighed 1127 g., right cerebral hemisphere 497 g., left hemisphere 482 g., cerebellum, pons and medulla 156 g. The skull capacity as estimated by the method of Rosanoff and Wisemann was 1270 cc. The first temporal, transverse temporal and supramarginal gyri of the right side were smaller than the corresponding gyri of the left side. The rather diffused atrophy of the cerebrum is slightly more marked on the right side. The pial thickening and opacity is confined almost exclusively to the frontal and upper two thirds of the parietal convexity. On section of brain no gross focal lesions were found anywhere. The spinal pia exhibited many small osteomata distributed chiefly in the ventral portion of the thoracic area. The cord was of delicate proportions, slightly congested, otherwise no gross lesions.

Histological Description.—The microscopical examination of the trunk organs is confirmatory of the anatomical diagnosis of the protocol, a detailed description of which does not seem necessary. The histological alterations of the brain we limit to what seem to us the most important features.

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The cortical histological alterations are essentially those which characterize a severe form of senile dementia, ganglion cell atrophies—in some instances with superimposed acute changes—rich lipoid deposits in ganglion and glia cells, fine-fibred glia proliferations and cellular gliosis, progressive-regressive changes in the vascular apparatus, so-called senile plaques, and the like. In addition to these changes, particularly in left occipital convexity, are certain small areas suggestive of the areas found in senile cortical devastation. The parts so affected are frequently of irregular outline and commonly found at the bottom of sulci, although also seen in the lateral and summit portions of gyri. These areas are not always coextant with the triangular or wedge-shaped areas of cortical vascularization, but always within and surrounding them are large glia cells (Fig. 3). There is not, however, any especial fibrillary gliosis. Indeed, by the special glia methods glia fibers are scant within these foci, the whole picture by practically all methods employed imparts the impression of a comparatively recent process. The large pale cells seen in the devasted area (Fig. 3) are glia cells.

In contradistinction to the comparative absence of macroscopic evidence of cerebral arteriosclerosis in the larger vessels of the brain the microscopic examination reveals alterations in the smaller vessels of the cortex and marrow which are usually interpreted as arteriosclerotic changes, such as proliferative changes in endothelium, splitting of the elastica, regressive alterations of proliferated elements, a few instances of hyaline alteration of the vessel wall, the arteriofibrosis of Friedmann[5] which Simchowicz[6] and one of us,[7] separately, have illustrated in recent publications, vessel budding and so-called packet (*Pakete*) formations. The calcareous degeneration of small vessels which Lafora[8] and Jansens[9] report as present in their cases we did not find in this case.

The Alzheimer degeneration of intracellular neurofibrils (basket-like ganglion cells in neurofibril preparations) was not exhibited by a single ganglion cell, numerous areas of the cortex, basal ganglia, pons, medulla, cerebellum and spinal-cord were examined, more than 300 sections prepared after the Bielschowsky, Levaditi silver impregnation for *trepinoma pallidum* * and the Mann methods being employed. In this respect, then, the case is like Alzheimer's second reported case,[4] but there the likeness ceases, in so far as the chief characteristics of neurofibril preparations of this group of cases (plaques and basket cells) are concerned, but like all other cases in the main histopathological alterations.

* We have found this method useful for the demonstration of plaques and can confirm A. Hauptmann's statement, *Zeitschr. f. d. ges. Neurol. u. Psych., Bd. 9, S. 239, 1912,* that more plaques are exhibited by this method than by the Bielschowsky method, and is recommended where plaques are scantily shown by other methods. For finer plaque details, however, we prefer the Bielschowsky method, and Mann's eosin methyleneblue staining as recommended by Alzheimer.

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Senile plaques though present were neither large nor numerous in any of the regions examined, not even in the prefrontal areas and hippocampal gyri (Fig. 1) where generally these structures are the most numerous and the largest, although in the right hippocampal gyrus, T_1 rt., particularly in the portion of the latter forming a part of Campbell's audito-sensory area,[15] they were more frequently encountered. Next to these areas, the prefrontal regions of both sides and the right supramarginal furnished the greater number. No plaques were found in the central gyri, basal ganglia, pons, medulla, spinal cord and cerebellum. In the cerebellum, however, particularly in sections prepared after the Levaditi method, many amyloid bodies with fibrillary proliferations about the periphery were shown. A similar condition was also reported for the first Westborough case of Alzheimer's disease.[1] *

Although one of us has elsewhere shown [7] that the distribution of plaques is generally diffuse in character with accentuation where general histological alterations are greatest, it is not clear to our minds why the cerebellum and spinal cord should exhibit a comparative immunity. We have instances on record at Westborough of plaques in medulla, but none in the cord, even in those cases which showed them in the medulla. A feature of the plaques in this case to which we would call attention is the absence of the large centrally located nuclear-like body. Instead there is a collection of smaller homogeneous masses, imbedded, as it were, in a matrix of rather thick fibrils, some straight, others curled, the whole suggesting a conglomerate (Fig. 2). The exceptions are the very small plaques which Fischer [16] designates as *Morgensternchen*. Indeed the larger plaques not infrequently seemed to have resulted from a number of these little star-like structures arising simultaneously within a small area.

All of the plaques encountered in this case we consider as young varieties, in so far as one is justified in determining this from the character of the glial reactions in their vicinity. The fibril components of these plaques we judge to be chiefly neurofibril proliferations. In glia preparations we were unable to demonstrate glia fibrils within the plaques, but of course we recognize that that in itself would not exclude their presence in Weigert preparations. The Mann sections were also negative for a fibrillary gliosis.

The rather peculiar reaction in Herxheimer's scarlet stained sections—fine red stippling of the entire plaque—which Alzheimer described in his second case and which was also found in the first Westborough case was not demonstrated in the present case.

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* It may be well in this connection to call attention to recently published views of Alzheimer and of Bielschowsky concerning amyloid bodies. These observers point out the similarity of chemical makeup and the probability of a common origin from degenerating nervous elements. At any rate, one seems justified in deducing from their statements that they argue a similarity if not a like origin for plaques and amyloid bodies, structures so common in brains undergoing senile involution.

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The above are the essential clinical and anatomical data of this case.

Now how shall we group the case here reported and the other reported cases of so-called Alzheimer's disease; is all the data sufficient to warrant a new clinical group, or is it better to interpret them as representative of a phase of senile dementia, a precocious senile dementia, or if you will, an atypical senile dementia? At all events, if we take the ground that these cases fit best into the senile dementia group, it will be conceded that they are not of the sort commonly designated as "simple senile dementia," for their clinical histories and anatomical findings best comport with the severer forms of senile dementia. If, then, these are cases of atypical senile dementia, the question could fittingly arise why a special clinical designation—Alzheimer's disease—since after all, they are but part of a general disorder. Still the profession must remain indebted to Alzheimer for having first called attention to this type of cases. He himself does not claim a distinct clinical entity for the group, for in the discussion of his second reported case [4] he states as his conviction that since there were many points of contact, to say nothing of similarities between this group and senile dementia, there was no good ground for supposing a special pathognomonic process; that the cases were representative of a senile psychosis—atypical senile dementia—a view which is shared by Bielschowsky,[12] Lafora,[8] Jansens [9] and the writers.

Barrett,[13] in the report of a group of cases among which was included a case of the type under consideration, although not reported as such at the time, considered that plaques in combination with basket-like degenerations of ganglion cells, together with certain focal atrophies of the brain which his cases presented, offered "explanations of a special clinical group of senile psychoses." So that here also we have a case reckoned with the general mental disorders of senium.

Schnitzler's case,[14] at first sight, is disconcerting, for it is difficult to conceive a senile dementia in a person of 32. Nevertheless, Schnitzler groups his case with the type of which Spielmeyer writes as, "cases of senile dementia which differ from the usual type in that a marked dementia rapidly ensues, together with focal symptoms of asymbolic and aphasic character." He also shows an inclination to flirt with the rather fascinating idea of an

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origin from disordered internal secretions (ductless glands), since his case and one of the cases reported by Perusini [8] exhibited certain myxœdematous symptoms.

It is seen that all observers who have reported cases of Alzheimer's disease consider them as belonging to the senile group, although in most instances of precocious onset. We then, it appears, have to deal with an atypical form of senile dementia. But what are we to understand by senility in an anatomical or psychiatric sense?* Anatomically we are as yet unable to draw a line with any degree of precision between the brains of some so-called normal elderly persons and certain senile dements. Still while definite anatomical criteria may be lacking, in so far as concerns senile dementia, on the psychical side the lines are, perhaps, better demarcated. It is recognized that general dulling, memory weakening, disturbances of retention, impairment of judgment, lessened initiative, inability to concentrate the attention on matters formerly of interest and a weakening of the normal affectivity are hall marks, so to speak, of senile mental disorder in general. The lessened interest and the more or less profound disturbances of retention which accompany the dementia of senile insanities serve in a great measure to differentiate them from the inherited or other defect-psychoses. Nowadays one would hesitate to say that "a man is as old as his arteries," for the mental disorders of senium and arteriosclerosis are well defined, although often found in combination. One also hesitates, in spite of the intensive manner in which our knowledge concerning plaques has been recently cultivated, to reduce senile dementia to terms of plaques. The case of Schnitzler, admitting that is an example of an atypical senile psychosis, the two cases of circumscribed senile atrophies of Alzheimer,[4] the case here reported with but few plaques, the recently reported group of Westborough cases which coursed clinically as senile dementia, yet anatomically presented no plaques,[7] all give pause.

The case which forms the subject of this paper is, in our opinion, an example of the group now designated as Alzheimer's disease, although varying somewhat from the first Westborough case

*Whether senium is a normal or pathological process has been the subject of much discussion which leaves the problem far from solution.

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and other reported cases. The antecedent ill health and mental stress, the mode of onset with apprehension and depression, periods of mental confusion and active hallucinations, followed by a short period of remission were such as to suggest several possibilities. Among the possible psychoses considered were the infective-exhaustive group, manic-depressive insanity, Kraepelin's melancholia —now in disrepute in certain high quarters—and arteriosclerotic insanity. Although general paresis or cerebral lues was not seriously considered, a Nogouchi test of the blood was made. This proved negative. Soon, however, the marked disturbance of memory and retention, the aphasic disorders of a sensory character, the periods of confusion, restlessness and motor productivity, together with the earlier epileptiform convulsions without motor residuals, aroused the suspicion of a possible case of Alzheimer's disease, which we believe the subsequent course and anatomical findings as a whole justify us in maintaining.

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EXPLANATION OF PLATES.

Fig. 1.—Hippocampal gyrus rt. Levaditi method for *Trepenoma pallidum* as recommended by Hauptmann for plaques. This photograph shows as rich a field as found anywhere in the numerous sections examined. Bausch & Lomb ⅓ achromat. obj., Zeiss projection oc. No. 2, bellows extension 84 cm.

Fig. 2.—T_1 rt. Bielschowsky silver impregnation. Large plaque suggestive of the conglomerate described in text, and several smaller plaques, latter not in good focus. Zeiss 2 mm. apochromat. obj., projection oc. No. 2, bellows extension 90 cm.

Fig. 3.—Left occipital convexity. Area not unlike senile cortical devastation. Toluidin blue, after Nissl. Zeiss AA. achromat. obj., no ocular, bellows extension 1 m. 65 cm.

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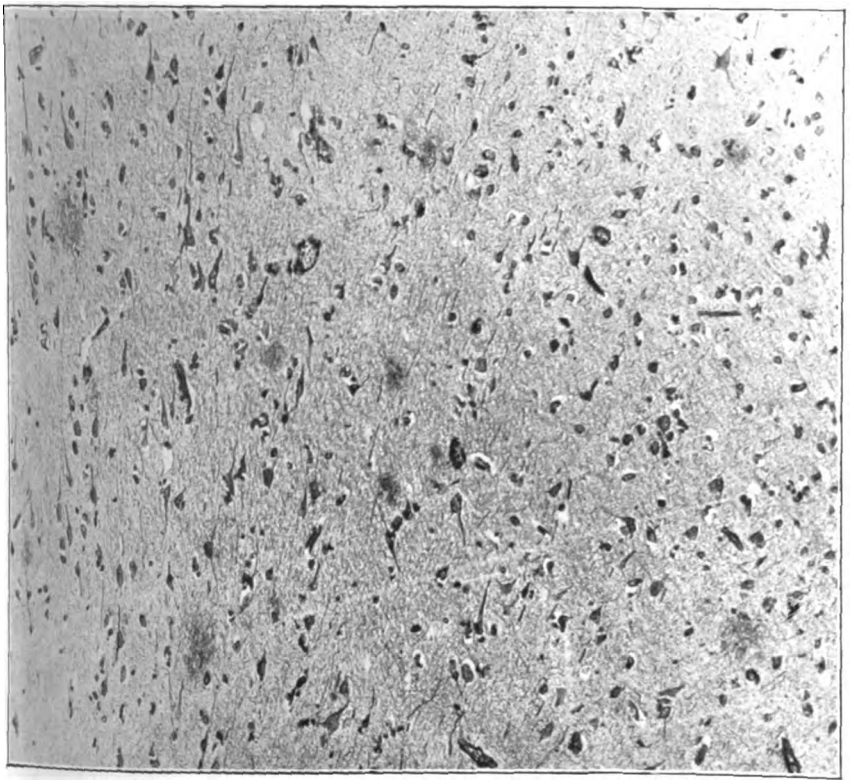

FIG. 1.

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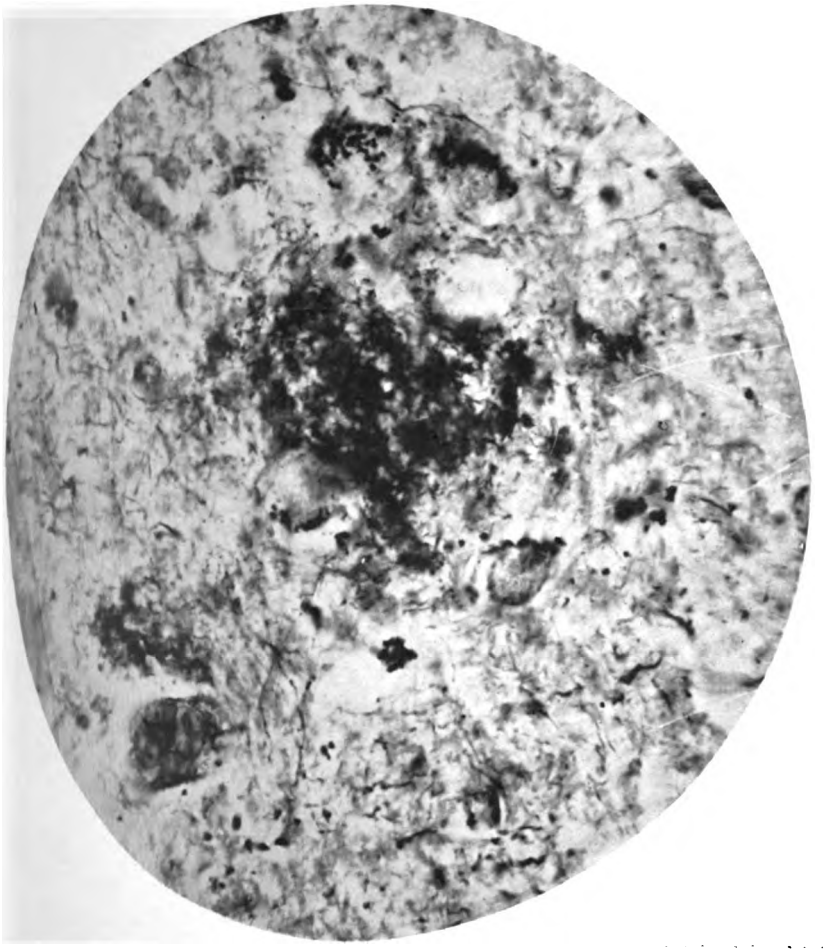

FIG. 2.

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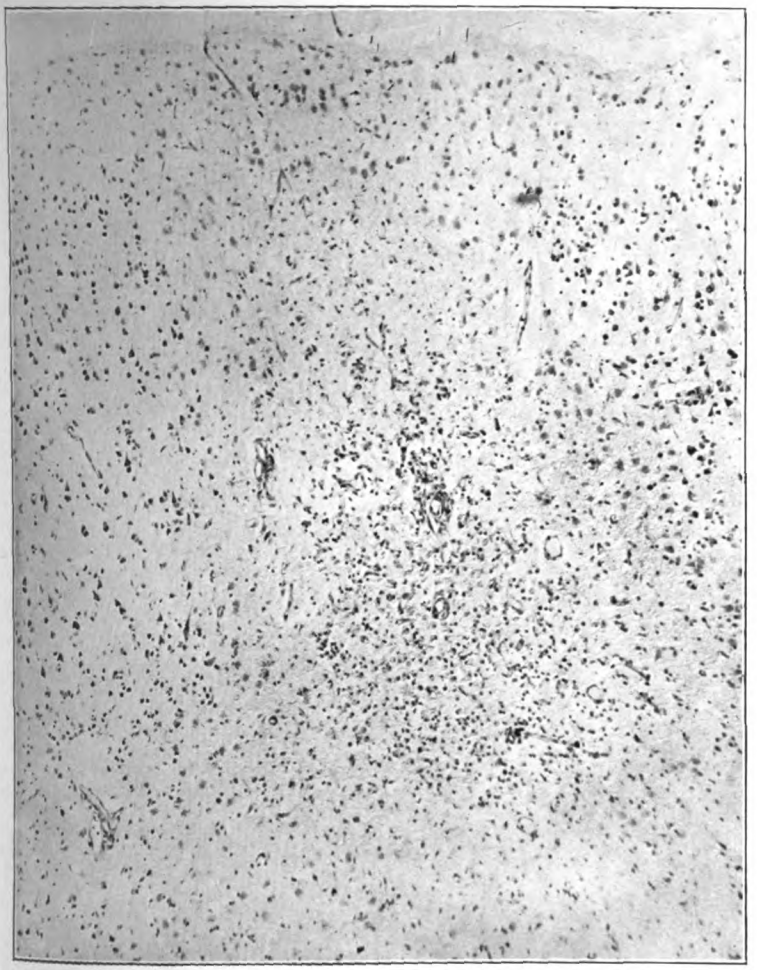

FIG. 3.

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SOME PROBLEMS IN THE STUDY OF HEREDITY IN MENTAL DISEASES.* †

By HENRY A. COTTON, M. D.,

Medical Director, New Jersey State Hospital, at Trenton.

Without doubt, from the standpoint of prophylaxis, at least, the most important aspect of psychiatry has always been the factor of heredity. It has been known for years, in a general way, that heredity has played an important rôle in the etiology of the psychoses, but we have been very far from having any definite knowledge of the subject. We have, until quite recently, been satisfied with vague opinions regarding "insanity in the family," of those mentally affected, without due regard to the nature of the malady in other members of the family.

The records of the patients in insane hospitals, even in those hospitals pretending to do modern scientific work, are woefully incomplete, inadequate and often inaccurate. In the older methods of examination the statistical data regarding heredity, as well as etiology in general, was based upon the statements of the committing physician. No attempt was made to inquire systematically into these questions, and every one knows how unreliable such statements received must have been. Even with modern methods, but very little progress was shown, as the source of information from the families of patients was also limited. The most conscientious work of the assistant physicians would fail to bring out all the important factors of heredity. Often the husband or wife of a patient was the only one who came to visit the patient, and usually they knew very little of the family history of each other. Hence, statistics made up from such sources, while much more

* Elaboration of a paper read by title at the sixty-seventh annual meeting of the American Medico-Psychological Association, Denver, Colo., June 19-22, 1911.

† This paper forms contribution number one of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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accurate and complete than statistics collected as above, at the same time the best obtainable by this method were open to serious and just criticism.

We have been content until quite recently with the loose methods of investigating this important subject, and the fact that insanity occurred in the family in such and such a proportion of our patients was considered enough for our present knowledge.

It is usual to see in statistics of insane hospitals a summary of the number of cases in which heredity was a factor, such heredity being merely insanity in the family. We have been aware that certain forms of insanity exhibited more heredity than others. But we have had no accurate knowledge of the nature and type of mental disease in ancestors and immediate families of our patients. We must all plead guilty to our lack of interest in this subject, and we must acknowledge our indebtedness to one outside of our work who has succeeded in arousing our interest and stimulating our endeavors in this field.

Prof. Charles B. Davenport, of the Eugenics Section of the American Breeders' Association, and in charge of the Eugenics Record Office at Cold Spring Harbor, has been the one to stimulate our interest in this field.

In this office, in which Prof. H. H. Laughlin has been associated with Prof. Davenport, the modern ideas of the study of heredity had its birth. The office has been in existence less than three years, but has already accomplished a great deal, and through this agency many state hospitals, as well as other institutions for the care of epileptics and the feebleminded, have been supplied with competent and well-trained field workers, who are now engaged in vigorously attacking the problem in a score of centers. The workers have been prepared by means of a summer school, which lasts six weeks. During this time systematic instruction is given in collecting data in the field, tabulating such data, and in making heredity charts. The workers are usually chosen from among college graduates, and those having some experience in social service work, preferably women.

It is with some pride that we note that New Jersey has been the pioneer in this special line of work. The first systematic study of the question of heredity in the feebleminded was the work of Prof. Johnstone and Dr. Goddard, of the Training School, at Vineland,

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and Dr. Weeks, of the Epileptic Village, at Skillman, has contributed the first important contribution based upon systematic field work on the question of heredity in this class of patients.

Dr. Everett Flood, of the Epileptic Colony, at Monson, Mass., has also done valuable work in this field. These can be said to have been pioneers in this work.

The King's Park State Hospital, in the State of New York, was the first state hospital for the insane to employ field workers in connection with their study of heredity, but such work has not been continued. We believe the New Jersey State Hospital at Trenton was the first to organize a permanent department of "field work," with a special appropriation to carry on the work, in connection with systematic "after care" work, and has now two trained field workers. By combining the heredity work with the "after-care" work, we feel that a direct benefit comes to the patient, and that we can show results of a practical immediate character as well as results which might be unjustly termed of theoretical importance only.

Literature.

Although Gregor Mendel published his discoveries of laws regarding heredity, which now bear his name, and are so well known, as early as 1866, it was not until 1900, when his work was rediscovered by De Vries and others, that the importance of his work in this field was recognized. It was mainly through the work of Bateson and other Englishmen that his work received the recognition in England and this country. Since 1900 many investigators have been occupied with the problems of heredity, especially in plant and animal life. To some extent the problems of human heredity have been investigated, and the science of eugenics has now grown to considerable proportions and found an important place in our studies of the human family.

But the relation between the science of eugenics and psychiatry has but recently been established, and the literature upon the subject is as yet extremely meagre, and, with one or two exceptions, is confined exclusively to this country. In only one other country can it be said that systematic study of heredity in insanity by means of field work has been established, and that is Germany. It is all the more surprising that this country, where so much

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valuable research in psychiatry had been carried on, had neglected this phase of the subject, especially as Mendel was a German, and his work should have been familiar.

And up to the present only one investigator has been occupied in this field in Germany, Dr. E. Rüdin, Oberartz of the Royal Psychiatric Klinic in Munich, under the direction of Prof. Kraepelin. His work is decidedly a most important contribution to the subject. His work is of such importance to the study of heredity in mental diseases that it is worth our while to review it more in detail, which will be done later. Since 1909, Rüdin has been Oberartz of the Psychiatric Klinic at Munich, and during this period he has personally collected material for the study of the complex problems of this question. (This valuable contribution of his is published in the Zeitschrift fur Gesammte Neurologie and Psychiatrie, Seventh Vol., 5th Part, Nov. 18, 1911.)

What makes the work of Rüdin so remarkable and noteworthy is the fact that he has done field work personally, and at his own expense. He gives up his position at the clinic for several months each year and goes into the field to collect this data. He has copies of the rosters of all the Bavarian institutions, and is able to get fairly good records of the patients who were in these institutions, although patients were committed a great many years ago. The fact that he has access to accurate records is a great advantage, especially in case of preceding generations.

From the majority of records of the hospitals in this country, even up to within a short time ago, it would be impossible to make any sort of a diagnosis of the patients admitted to them. In some cases one can get more accurate information upon which to base a diagnosis from the description of the cases who never come into the hospital than in patients who are admitted.

Another fact of importance connected with Rüdin's work is that he does his field work himself, and, consequently, is able to get better descriptions, to observe, and to " size up " the members of the family and classify them accordingly. Without financial assistance, and against difficulties which would seem insurmountable to us, he has achieved some wonderful results. He has accurate family histories in a great number of cases, representing various types of mental disease. Although he has so much material at his disposal, he feels that he has not done enough work to

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justify any general statements or formulation of laws regarding the heredity factors of insanity.

The Eugenics Record Office has issued bulletins from time to time, based upon the work done by their field workers in various institutions.

The first bulletin is on "The Heredity of Feeblemindedness," by H. H. Goddard, Ph. D., of the Training School, at Vineland, and is an extremely interesting and valuable contribution to the subject. Fifteen charts are shown. While it is a preliminary report of the work being done at Vineland, it is well worth reading by those interested.

Bulletin No. II, from the same office, is a compilation by Dr. Davenport, Prof. H. H. Laughlin, Dr. Weeks, Prof. Johnstone and Dr. Goddard, on the "Study of Human Heredity," and methods of collecting, charting and analyzing data. It has been the object of those interested in this subject to have a uniform method of charting which could be adopted by all institutions, so that the various institutions would understand, without difficulty, the work that is being done in other institutions.

Bulletin III is by Gertrude L. Cannon and A. J. Rosanoff, M. D., of the King's Park State Hospital, and is a preliminary report of the work done at the King's Park State Hospital, New York. This work is principally an outline of the methods used, and a brief description of the Mendelian laws.

The fourth bulletin, by Drs. Weeks and Davenport, is the result of systematic field work at the Epileptic Village, and is a valuable contribution to the inheritance of epilepsy. The authors give the following conclusions as the result of their work:

1. The method of field-study of epileptic families combined with the modern biological methods of analysis of hereditary data constitute a vastly improved means of inquiry into inheritance of epilepsy.

2. Epilepsy and feeblemindedness show a great similarity of behavior in heredity, supporting the hypothesis that such is due to the absence of a protoplasmic factor, that determines complete nervous development.

3. When both parents are either epileptic or feebleminded, all their offspring are so likewise.

4. The conditions, named migraine, chorea, paralysis, and extreme nervousness, behave as though due to a simplex condition of the protoplastic factor that conditions complete nervous development; *i. e.*, persons belong-

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ing to these classes usually carry some wholly defective germ cells. Such persons may be called "tainted."

5. When such a tainted individual is mated to a defective, about one-half of the offspring are defective.

6. When a simplex normal is mated with a defective, about half the offspring are normal; the others defective or neurotic.

7. When both parents are simplex in nervous development and "tainted," about one-quarter (actually 30 per cent) are defective.

8. The proportion of tainted offspring is not noticeably higher when both parents show the same nervous defect.

9. Normal parents that have epileptic offspring usually show gross nervous defect in their close relatives.

10. While we recognize that "epilepsy" is a complex, yet there is a classical type numerically so preponderant that, in the mass, "epilepsy" acts like a unit defect.

11. Our data point to a poisoning in slight degree of germ cells by alcohol, but the evidence is hardly crucial.

12. There is evidence that in epileptic strains the proportions of epileptic children in the latest complete generation is double that of the preceding; but there is no evidence that in these epileptic strains the average number of children in a fraternity is greater than in the population at large. Provided matings continue as at present, and no additional restraint is imposed, the proportion of epileptics in New Jersey would double every thirty years.

13. The most effective mode of preventing the increase of epileptics that society would probably countenance is the segregation during the reproductive period of all epileptics.

Dr. Rosanoff and Florence I. Orr, B. S., are the authors of Bulletin No. V, entitled, "The Study of Heredity in Insanity in the Light of the Mendelian Theory." The conclusions of the authors are based upon the investigation of about 73 cases, and the heredity charts in these cases are reproduced. This represents 206 different matings, total, 1097 offspring. A table is given, showing the proportion of normal and neuropathic offspring, which resulted from various types of matings, compared to the theoretical expectations according to the Mendelian theory. The authors have considered that the neuropathic constitution, in reality, consists of a series of units, which are distinct, at least from the standpoint of clinical definition, though at the same time in manner related to each other. One is forced to emphasize here the fact that it is necessary to keep an open mind in regard to these problems. In other words, that we must investigate the facts of the heredity of psychoses as they exist, and not to be too

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prejudiced towards the Mendelian laws. Following are the conclusions given by the above authors:

1. The neuropathic constitution is transmitted from generation to generation in the manner of a trait, which is, in the Mendelian sense, recessive to the normal condition. Rules of theoretical expectation are accordingly as follows:

a. Both parents being neuropathic, all children will be neuropathic.

b. One parent being normal, but with the neuropathic taint from one grandparent, and the other parent being neuropathic, half the children will be neuropathic and half will be normal, but capable of transmitting the neuropathic make-up to the progeny.

c. One parent being normal and of pure normal ancestry and the other parent being neuropathic, all the children will be normal, but capable of transmitting the neuropathic make-up to their progeny.

d. Both parents being normal, but each with the neuropathic taint from one grandparent, one-fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny, one-half will be normal, but capable of transmitting the neuropathic make-up, and the remaining one-fourth will be neuropathic.

e. Both parents being normal, one of pure normal ancestry and the other with the neuropathic taint from one grandparent, all the children will be normal, half of them will be capable, and half not capable of transmitting the neuropathic make-up to their progeny.

f. Both parents being normal and of pure normal ancestry, all the children will be normal and not capable of transmitting the neuropathic make-up to their progeny.

2. Various clinical neuropathic manifestations bear to one another the relationship of traits of various degrees of recessiveness; in a most marked way recoverable psychoses, though recessive as compared with the normal condition, are dominant over epilepsy and allied disorders.

3. Various other clinical neuropathic manifestations bear to one another the relationship of neuropathic equivalents; that is to say, they are conditions of the same degree of recessiveness, varying in their clinical manifestations with the personality of the subject, environmental conditions, etc.

4. All the neuropathic children, which result from a mating of the fourth type (both parents normal, but each with the neuropathic taint from one grandparent), can have, theoretically, only equivalent defects and not defects of different degrees of recessiveness.

5. Among the actual results from such matings the following have been met with:

a. Brothers and sisters suffering from clinically identical neuropathic manifestations.

b. Psychosis in one subject and peculiar or abnormal disposition, but no actual psychosis in brothers and sisters.

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c. Psychosis in one subject and isolated, but clinically related symptoms in brothers or sisters; we find with particular frequency dementia præcox—fainting spells or convulsions in childhood.

d. Psychoses clinically not known to be related; senile deterioration—peculiar hysteriform psychoses.

6. Neuropathic conditions show only in about one-fourth of the cases indications for commitment to sanitariums or public institutions. The total incidence or neuropathic conditions may be roughly estimated as affecting between 1.5 and 2 per cent of the general population.

7. It is further estimated that about 30 per cent of the general population, without being actually neuropathic, carry the neuropathic taint from their ancestors and are capable under certain conditions of transmitting the neuropathic make-up to their progeny.

The methods of assuming facts, when they do not exist, is open to just criticism, and the fact that it was necessary for the authors to assume the fact of the simplex inheritance in places where information was not available, is open to criticism. It is true that these cases where the simplex inheritance is dissimilar has been treated separately and distinct from the other material. It is self-evident that the question of human inheritance presents many difficult problems, and there will be many cases that apparently do not follow any given law. The lack of matings and the absence of children in many families, or the usual "two-children" families, offers serious difficulties in making out definite laws regarding inheritance.

To some extent feeblemindedness can be considered a unit, but here one is forced to recognize the fact that imbecility itself is far from being a unit, and may be caused by entirely different factors. The grades of feeblemindedness, as outlined by Goddard, viz.: highest types, morons, next grade, feeblemindedness, and then imbecility and idiocy, are practical for a clinical classification, but from the standpoint of etiology these types may not be so distinct, and there certainly can be a distinct difference between the members of any one class. No one will deny that in feeblemindedness we have the purest form of inheritance, and that feebleminded parents, as found by Dr. Goddard, will certainly produce feebleminded children. At the same time, a no small number of cases of feeblemindedness may be the result of external causes, and not altogether due to heredity features. Infectious diseases in child-

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hood, especially scarlet fever, and perhaps other fevers, cause feeblemindedness, both directly and indirectly, by arresting development through the direct action upon the cerebral tissues, and indirectly produce arrested development through deafness and other disturbance of the sensory organs.

When discussing the cause of epilepsy, one has to be especially careful not to consider this disease as a unit, a fact recognized by Weeks and Davenport. It is far better to consider the group as "the epilepsies" rather than to consider the disease as a unit. So it is even necessary, in discussing the inheritance of these simple forms of disease, to be guarded in not considering them entirely as units. At the same time, we recognize the fact that inheritance plays an important part in the production of feeblemindedness and "the epilepsies" and that the laws concerning same will be much simpler than the laws regarding other psychoses. In fact, we are forced to consider that these two diseases are subdivisions of insanity as such, and for this reason one readily sees the error in considering insanity as a unit or uniform disease.

F. W. Mott (Brain, Part 2-3, Vol. XXXIV, Nov., 1911), "Inborn Factors of Nervous and Mental Diseases," discusses the question of inheritance in general, and in particular the hereditary features of insanity. He discusses at length the laws of Galton, and is inclined to agree with his views, which laws, as we know, are opposed to those of Mendel. He also discusses the Mendelian principals at length, and gives a detailed explanation of these laws. He firmly believes in the law of sex limitation in certain types of diseases, such as color blindness and hæmophilia, and, in the field of nervous diseases, pseudohypertrophic paralysis. This form of inheritance is not only discontinued or interrupted for successive generations, but the disease is limited to one sex, although it is to be noted that the disease is transmitted by the sex in which it does not appear. Thus, it is the males who are affected in hereditary sex-limited diseases, and it is the females who transmit the disease. Mott also gives considerable space to "Nature and Nurture," and shows, conclusively, how in a great many conditions the environment and experience due to environment may have a very important bearing on inheritance. Also that a neurotic tem-

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perament may be manifested in many different ways by conduct and behavior, and this neurotic temperament may be the first evidence of any degeneration in the stock. It is well that he has emphasized this important fact, for these characteristics must be looked for in collecting data for pedigrees of the insane, as it has been found that they are of as much importance as the pure mental disease in the ancestors. It is true, as he states, "that unsound stock may have successful men in the eyes of the world, but these may really form the first step in the process of degeneration, for avarice and normal guile, which made them pillars of society, may come out in the next generation as gross criminality or insanity. Mott is of the opinion that inborn factors partly, if not wholly, can account for the appearance of insanity in the stock."

Of considerable interest is the discussion of the Law of Anticipation, which was defined by Nettleship as "a manifestation of the morbid change at an earlier period of life, either in members of each succeeding generation as a whole, or as successively born children of one parentage." He gives examples of the truth of such a law. His observation, "that there is a general tendency for insanity not to proceed beyond three generations, either because of regression to the normal, or from the fact that the stock dies out," is important. But his explanation, that not infrequently the stock dies out through the inborn tendency of insanity manifesting itself in the form of congenital types, such as imbecility, or in the insanity of adolescence, is open to criticism, for it is not always true that children of insane parents are defectives. Types of insanity, of course, have to be considered, but even children of dementia præcox are frequently entirely normal, and the brothers and sisters of such patients may also be normal, although many of them appear to be peculiar. Mott gives some interesting statistical data regarding familial character of insanity, but here one is forced to call attention to the uselessness of such statistics, where insanity is considered as a unit. We call attention elsewhere to the necessity of considering various types separately, at least until we can establish some sort of relation between the various forms, especially as regards hereditary features. He gives statistics of 2246 individuals where one or more members of the family were inmates of an institution. This is all right as far as it goes, but

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in our field work we frequently find evidences of mental disease in members of the family where these individuals have never been inmates of an institution. Especially is this true in early generations, where a very small percentage of those who were insane have been committed to a hospital. So that, to be accurate, one must consider these cases as well as members of the family who have been in institutions. It is also important to note that statistics based on hospital admissions alone would not truthfully represent the facts.

Mott gives the conclusions of Dr. Edward Shuster, who made the study of inheritance of the same types of insanity in 1910. They are as follows:

1. A periodically insane son or daughter is more likely to be associated with a periodically insane mother or father than if one if differently affected. In the case of two offspring in the insane there is even a greater tendency for a periodically insane male or female to be associated with a periodically insane brother or sister than with one differently affected.

2. In case of delusional insanity, the tendency for the affection to run in families is very strongly marked, and the correlation between members of the same co-fraternity is more strongly marked than between parents and offspring.

3. In the instance of primary dementia of adolescence, there is a strong correlation between members of the same co-fraternity. There is also a decided tendency indicated for the brothers and sisters of imbeciles to be also imbeciles.

4. There is no indication of general paralysis running in families. This is not surprising, as it is now recognized to be an acquired disease due to syphilitic infection. Both conclusions would seem to be justified from our knowledge at the present time. The chief criticism of Mott's work is that he has not gone carefully enough into the question, as he has practically taken only the cases which have been admitted to the institutions as a basis for his statistics, thus leaving out of consideration a large number of important individuals.

It is conclusively demonstrated in this country that only by the help of well-trained field workers can we expect to collect valuable data regarding this complex question, and, secondly, in considering the inheritance of insanity, he is inclined to treat the disease as a unit, rather than to closely differentiate the various types. We must first establish the same rules between the various types of psychoses before we can justly consider them similar or dissimilar as regards the form of inheritance. Mott's article, in all prob-

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ability, represents the best work that has been done by the English in this field.

Mendelian Laws in Relation to Insanity.

In recent literature we find explanations of the principles of heredity as formulated by Mendel, but the clearest exposition of the subject is found in the work of Rüdin.

We are acquainted with the facts that the total inheritance of an individual from his parents is certain human characteristics, each of which is inherited independently of all the rest, and the inheritance of any such character is believed to be dependent on the presence in the germ plasm of a substance called the determiner.

With reference to any given character the condition of an individual may be dominant or recessive: the character is dominant when, depending upon the presence of its determiner in the germ plasm, it is plainly manifest. It is recessive when, owing to the lack of its determiner in the germ plasm, it is not present in the individual under consideration.

The symbols D and R in the following table represent the dominant and recessive conditions. In other words, D stands for the presence of the determiner of the trait, and R stands for its absence.

The following formula for six types of matings and their resulting offspring:

Type 1. $(D+D)X(D+D)=4DD.$
Type 2. $(D+D)X(D+R)=2DD+2DR.$
Type 3. $(D+D)X(R+R)=4DR.$
Type 4. $(D+R)X(D+R)=DD+2DR+RR.$
Type 5. $(D+R)X(R+R)=2DR+2RR.$
Type 6. $(R+R)X(R+R)=4RR.$

We speak of the inheritance of a character from both parents as duplex inheritance, designated by DD.

The case of inheritance of a character from one parent is spoken of as simplex inheritance, designated by the symbol DR.

In Fig. I, taken from Rüdin, we have exhibited diagrammatically the principles of the Mendelian prevalence and the rules of

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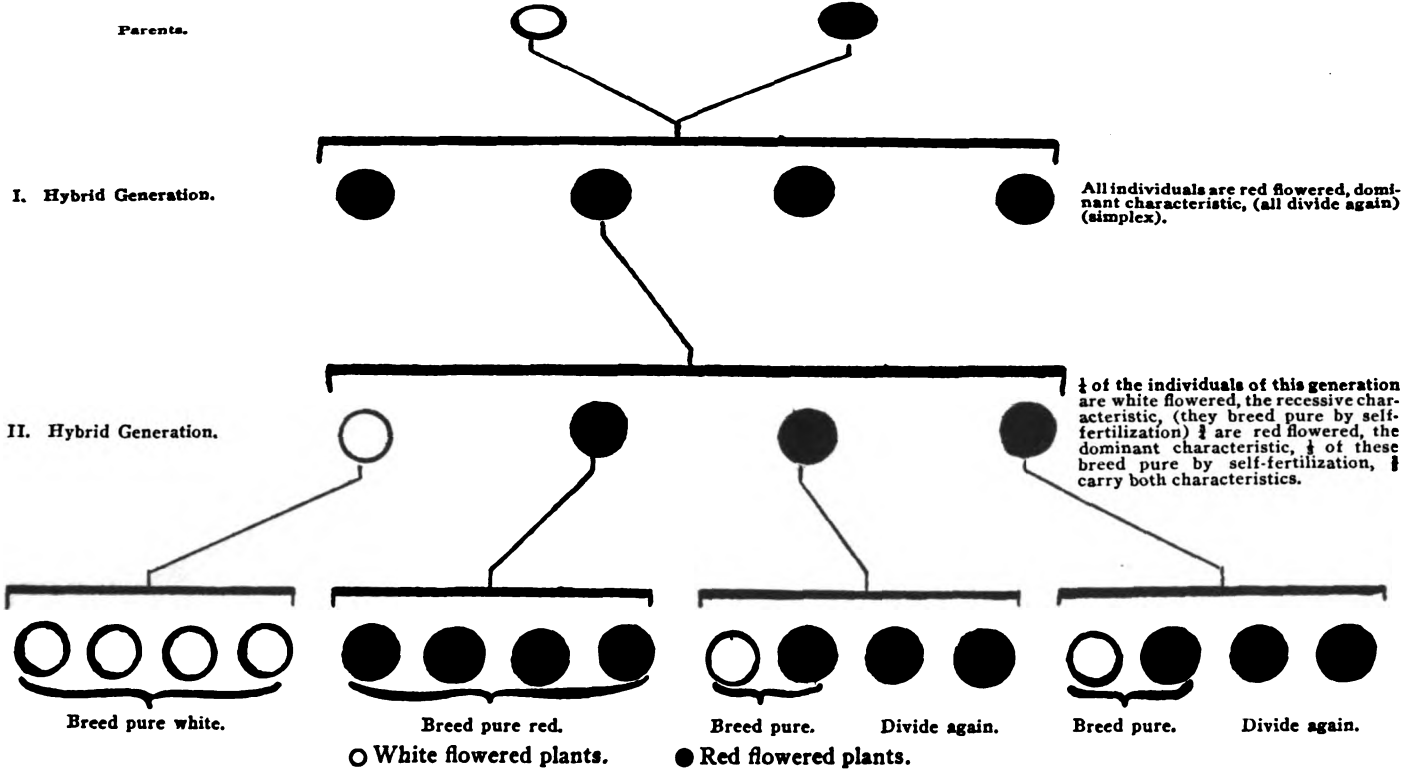
FIG. I.

MENDELIAN PREVALENCE AND RULES OF DIVISION.

(Inheritance of the pea flower.)



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variance in the original experiment of the crossing of red and white peas. In the first hybrid generation we see that all individuals are red-flowered peas, although this generation contains also white-flowered characteristics, which are not manifest because the red is dominant. In the second hybrid generation we see the Mendelian proportions of one white to three red, in other words, one recessive and three dominant. In the third hybrid generation the white sweet pea breeds only white, one-third of the red peas breed pure red, while two-thirds of these red peas breed white and red in the proportion of one to three. This is the simplest explanation of this law. We see by this chart that the pure Mendel inheritance is not a mixed product composed of inherited characteristics, and these characteristics do not exist in a permanent combination, but always occur as separate unchanged characters in succeeding generations.

In Fig. II (after Rüdin), we see a diagrammatic explanation of this law of the regular appearance of the dominant and recessive characteristics. We see in Row I the germ plasm from which the parents develop. On the right the two black dots represent the homozygous gameten, because the germ plasm or the fertilized germ cells, gameten, has only one characteristic, that is, either for white or red. The germ plasm of these separate individuals, *i. e.*, the father and mother, are also considered as pure homozygous. By mating this pair, and following the lines in Row III, we will see there is an equal number of red and white gameten. In Row IV, which produces offspring shown as red in Row V, but, although this generation is red entirely, the gameten are not homozygous but heterozygous, that is, made up of both red and white characteristics, but because the red is dominant, the white characteristic does not appear. Now, by mating two of this generation, and noting the lines indicating combinations in Row VI, we see the reason for the proportions in the second hybrid generation. We have one white individual made up of homozygous gameten, one red homozygous and two heterozygous. Because of the red being dominant, the white characters do not show. Then in the germ plasm of these individuals we have the white producing pure white, and the red producing pure red, and the heterozygots producing both white and red.

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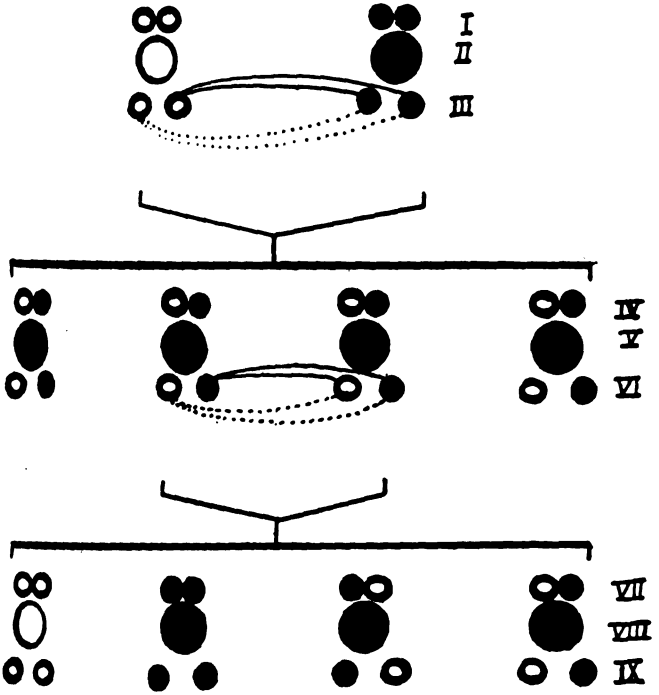
FIG. II. (After Rüdin.)

The Experimental Crossing of the Red and White Flowered Pea.
(The "anlage" combination of the Gametes and zygots.)



●○ = Germ plasm which carries the tendency (anlage) for white flowers only.

●● = Germ plasm which carries the tendency (anlage) for red flowers only.

○○ = Germ plasm which carries tendency for red as well as white flowers.

Row I. Germ plasm from which the parents are derived, they carry the one character. White or red, they are pure homozygous.

Row II. The two parents which result from the above germ plasms.

Row III. Pure, homozygous germ plasm which is produced by the parents.

Row IV. Result of the union of the unit characters from the parental germ plasm, heterozygous are combined germ plasms (simplex).

Row V. Here the tendency for red in the germ is dominant over the tendency for white. The flowers appear red, the first hybrid generation.

Row VI. The two characters, which are present in the heterozygous germ plasm and are derived from the parents, divide again, so that half of the germ cells bear the tendency (anlage) for white, the other half the tendency for red.

Row VII. The fourth combination of characters which occurs through the crossing of two hybrids of the first hybrid generation, two heterozygous and two homozygous.

Row VIII. Where the tendency for red is dominant over white, red flowered and white flowered individuals result from the four named germ plasms in the proportion of one to three.

Row IX. The above-named combination of germ plasms from the first hybrid generation will again divide. The one white individual, because it is produced from germ plasm with a tendency (anlage) for white only, produces germ cells with a tendency for white; one red individual with germ plasm with tendency for red only and two red individuals with both characters.

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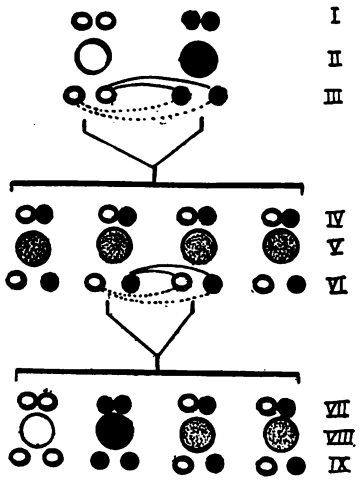
There is still another form of inheritance, which is shown in Fig. III, which is known as incomplete inheritance of the dominant characters or intermediate inheritance. This figure illustrates the mating of the red and white " wunder blume " or maribilis jalappa. By mating the red and white plant of this species we get in the

FIG. III. (AFTER RÜDIN.)
SCHEME OF MENDELIAN INHERITANCE OF THE INTERMEDIATE TYPE.



∞ Germ plasm, which carries the tendency (anlage) for white flowers only.
●● Germ plasm, which carries the tendency (anlage) for red flowers only.
∞● Germ plasm, which carries the tendency for red flowers as well as for white flowers.
○ White flowered individual.
● Red flowered individual.
● Pink flowered individual.

first not pure red or pure white or the prevalence of dominant characters, but the progeny shows a resulting mixture of red and white indicated by pink, but, as shown in Row IV, this progeny-colored pink is made up of heterozygous gameten, capable of producing both red and white. This is shown in the succeeding third generation, where we have one pure white individual, one pure red individual and two pink individuals. The white and red

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are homozygous, while the two pink plants are heterozygous, and this explains the fact that while the law of prevalence is an important factor of Mendelian heredity, at the same time the most important fact is that the antagonistic characteristic factors do not produce any permanent combination, but always occur as a separate unchanged character in succeeding generations.

So far we have spoken of the inheritance of dominant characteristics, and this rule holds good when this dominant characteristic is an abnormality.

We are now to consider the laws of inheritance, where the abnormality is recessive. This is shown in Fig. IV. The recessive characteristics here are indicated by the black, hence are not to be confused with the other figures where the black indicates the dominant characters. Here there are six possibilities of a simple recessive Mendelian inheritance. In Row IV we see the result of the mating of a dominant homozygot with recessive heterozygot (Row I). All the individuals in Row IV are normal, notwithstanding the fact that they inherited a defect from one parent. This is illustrated by the white circle with the black dot. The abnormality is not apparent when, for example, the dominant normal mates with the dominant normal (in Row IV-a the dominant homozygot mates with a dominant heterozygot; Row VII-b, the dominant heterozygot mates with a dominant homozygot). There is a very important exception when the abnormality again comes to the surface, as seen in Row VII-c, where two dominant heterozygots mates with homozygots, in other words, two normal individuals with a duplex inheritance (normal and abnormal). Then we have one quarter of the progeny recessive homozygot, therefore abnormal in Row X-d. However, when recessive homozygot (abnormals) mates with dominant heterozygot (Row IV-e), then we have one-half of the progeny abnormal, and, finally, when two recessive abnormals, homozygots mate (Row VII-f) all the progeny will be abnormal (Row 10-g). When one of the parents is sick (abnormal), mated to a normal or normal mated to normal individuals, the progeny is normal children. They may also have abnormal children. Normal individuals from affected families will have normal progeny, the same as normal individuals from families without any inherited defect. We have these two phenomena, matings between normal individuals from

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FIG. IV. (A

"ANLAGEN" COMBINATION O

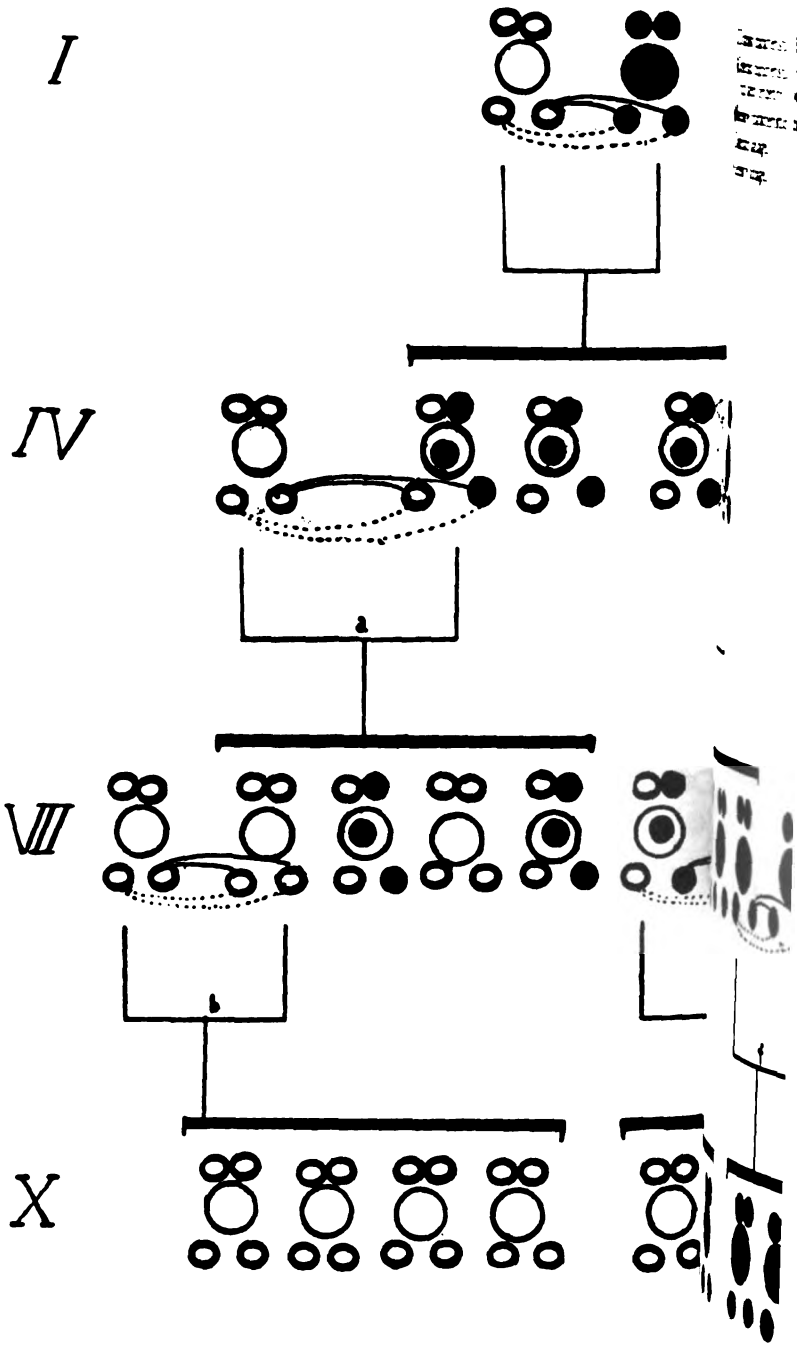

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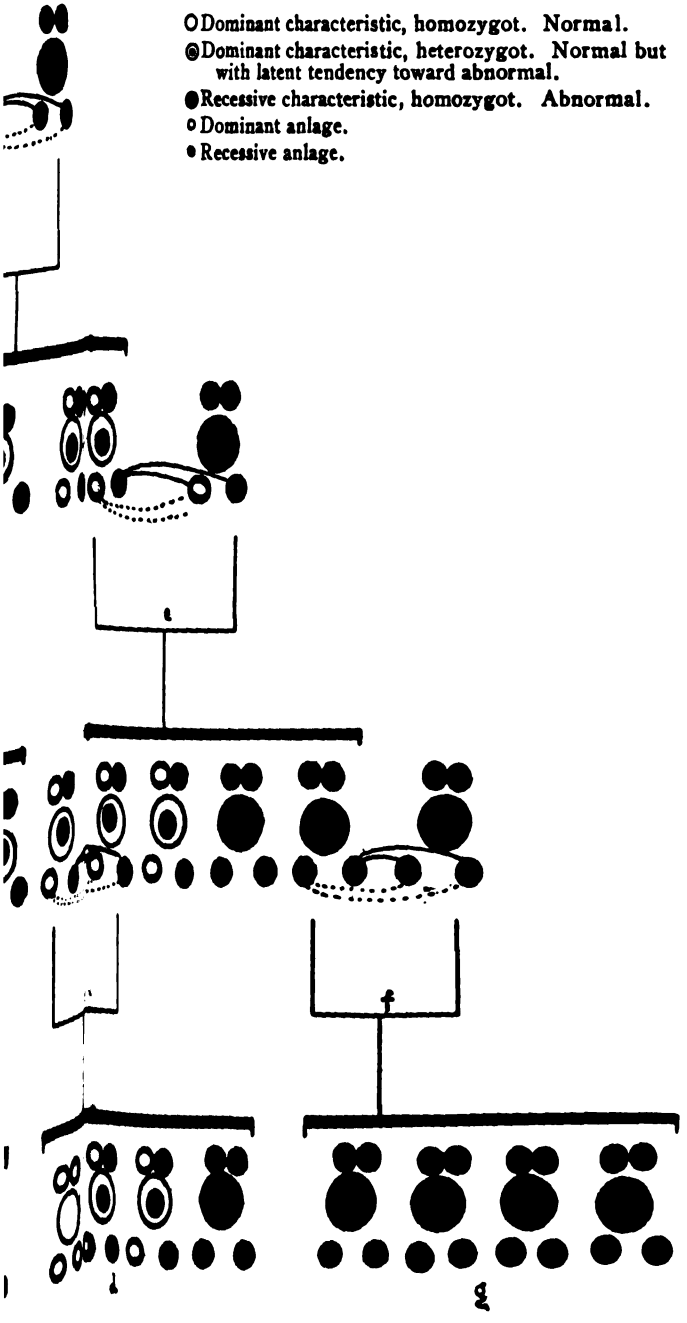
FIG. IV. (after Rüdin.)

Combination of Recessive Abnormalities.



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families without hereditary taint will show all normal progeny. Where both parents are abnormal all the progeny will be abnormal.

If we analyze the proportions in this chart, we will see that the apparent irregularity, with so-called exceptions, have a definite basis and follow definite rules. When two normal individuals have abnormal children, the proportion is one to four or two to eight, while parents who are normal and well, at the same time their germ plasm is not pure. Instead, the germ plasm is heterozygous. One or the other of the parents comes from ancestors, one of whom at a certain time was abnormal. When normal individuals have normal children, at least one parent has pure germ plasm, *i. e.*, homozygous, whose ancestors have never had any similar disease, or only through indirect ancestors, the grandparents or great-grandparents, or the collaterals, but never from the parents. In cases where an abnormal has normal progeny, the other parent must necessarily be homozygot (normal), and there is no tendency to abnormal. When an abnormal individual mates with a normal individual and have abnormal children, we find that the proportions of the abnormal to the normal will be as one to one, in other words, half of the children will be abnormal. In this case, however, the normal parent is heterozygot, normal.

Following Rüdin further in the discussion of this question on inheritance are given diagrammatic in Figs. V and VI, illustrating respectively the inheritance proportions, where abnormalities are dominant and where abnormalities are recessive. These diagrams give a better explanation of the proportions that are usually expressed by the formulas *DD, DR* and *RR,* which are given above.

Rüdin states that individuals with identical types of ancestors, which to all appearance, have identical characters, notwithstanding this, can have the combinations of gameten that are entirely different. Thus, in Fig. VI, in the square marked 5 and 6, the children have identical types of ancestors, but the children are not the same, and seven of the eight children who externally appear to be the same have entirely different combinations of germ plasms. The opposite also holds true that individuals can have identical gameten combinations and at the same time have quite different types of ancestors. In Fig. VI, square 2 and 3, we find quite a difference in inheritance where abnormality is dominant or recessive. In families where the abnormality is dominant there will

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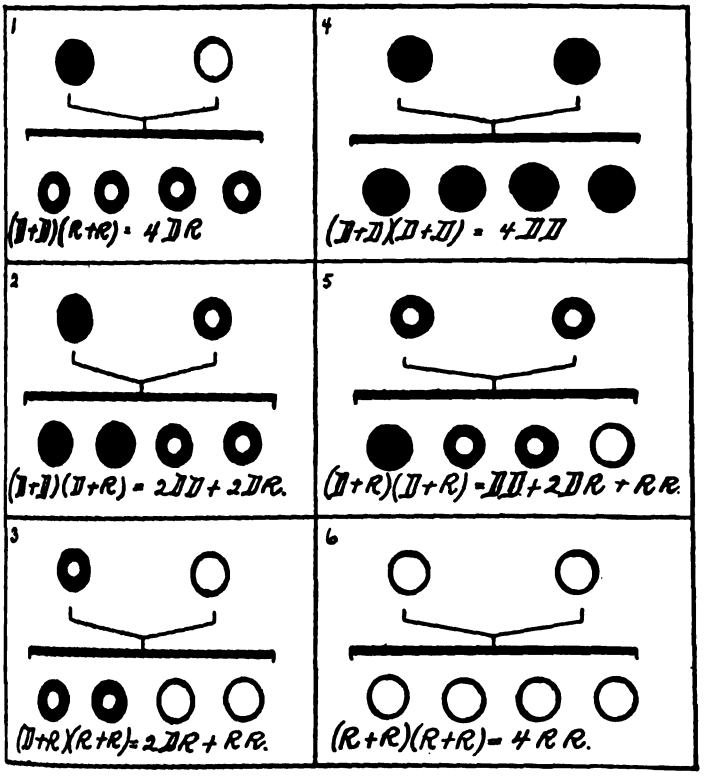
be a great many abnormal progeny, as shown in Fig. V, with 17 abnormal individuals, while in Fig. VI there are only seven abnormal individuals in the progeny, and particularly in each and every generation and in each and every family where one parent

FIG. V. (After Rüdin.)

Inheritance Proportions in Dominant Abnormal.



● Abnormal, dominant homozygot. ◐ Abnormal, dominant heterozygot.
○ Normal, recessive, homozygot.

is abnormal; on the other hand, in families with the recessive Mendelian abnormality in much fewer individuals, and not in each and every generation and each and every family. This latter fact is of extreme importance, for an abnormality can skip two or even three or more generations.

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Contrary to the rule in the dominant type of inheritance of an abnormality, we see in families, where abnormalities are of the recessive type, that external normal individuals are not always at the same time produced by normal germ plasm, for the external appearance of normality may cause errors to be made, and this rule is important when the question of marriage of relatives, cousins, etc. While they may appear absolutely normal, at the same time the tendency to abnormal characteristics may be present in the germ plasm of each individual, consequently, the children of such mating are much more liable to be defective through the inheritance of these latent abnormalities in the parents. Each and every normal individual from a family with a dominant abnormality is also of normal germ plasm. In normal individuals, from a family of recessive abnormalities, the same can also occur, but it is not absolutely necessary Fig. VI, square 3). Through different associations of matings and pairing the resulting proportions through the experiments in animal and plant life, the homozygous and heterozygous elements have been produced and accurately settled. Each and every abnormal individual of a family with a recessive abnormality is consequently of abnormal germ plasm. On the other hand, abnormal individuals have a dominant abnormality when one of the parents is normal, possesses also an anlage to normal. In cases of dominant abnormalities there is the danger only for the progeny of the abnormals, but for the normal progeny there is no further danger.

Rüdin gives us two main points from the standpoint of prophylaxis. 1. For families with inheritance of dominant abnormality, matings should be made only by normal members of a new stock, or with members of the same family. 2. In families with recessive abnormalities, matings can be made by all the individuals, but for the best results, certainly only the normal individuals, not only with new stock, but with the members of a normal new stock. These points that we have just spoken of can be said to be closely allied to the " mutation theory " of H. De Vries.

Rüdin discusses at length the Galton theory of inheritance of characteristics from ancestors, which views are utilized by Pearson, Darbishire and others, known as the Biometric School. Galton's law, concerning inheritance, is that a given person inherits one-half from the father and mother, from the grandparents one-

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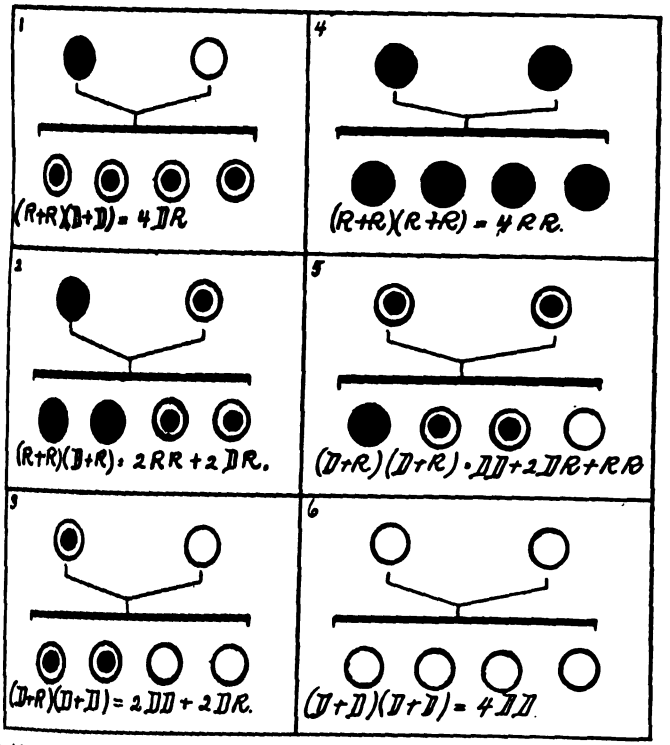
quarter, etc. That is, the given person is related one-half to the father and mother, and one-quarter to the grandparents, and one-sixteenth to the great grandparents. We have the following formula of the proportions of inheritance from the ancestors:

$$\tfrac{1}{2}+\tfrac{1}{4}+\tfrac{1}{8}+1/16+\ldots\ldots=1.$$

FIG. VI. (After Rüdin.)
Inheritance Proportion in Recessive Abnormal.



● Abnormal, recessive homozygot. ◉ Normal, heterozygot.
○ Normal, dominant homozygot.

Rüdin opposes this law of Galton, which has had such an effect upon the English school. He maintains that a given person does not inherit half from the father and mother, or one-quarter from the grandparents, but inherits distinct characteristics of the fathers or mothers or grandparents. In other words, from the Mendelian point of view, a person may inherit characteristics which make

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him directly related to any one of his ancestors, or there may be no points of resemblance. Rüdin further discusses the complication which arises when one and the same abnormality is dominant for male members of a family, on the other hand, recessive for female members of the same family.

In Fig. VII is shown the well-known chart of Bateson, exhibiting the inheritance of color blindness. This peculiar form of inheritance occurs in other diseases, especially in hæmophilia. This form of inheritance was looked on as an exception to the Mendelian rule. By such charts analyzed closely, it is seen that they follow a fixed rule.

Rüdin gives, further, a large number of characteristics and traits in both the botanical and zoological fields. But of interest to us here are the characteristics often dominant in human individuals.

The Hapsburg lower lip in the male sex is almost exclusively dominant over the normal lips.

Single births dominant over twins and triplets.
Huntingdon's chorea dominant over normal.
Familial periodic paralysis over normal.
Porokeratosis over normal.
Night blindness over normal.
Progressive muscular atrophy over normal.
Hæmeturia over normal.
Ptosis familias over normal.
Normal dominant over amaurotic idiocy.
Many familial muscular diseases over normal.
Familial psoriasis and cerebella hereditary ataxia over normal.
Many forms of ichthosis palmaris over normal.
Normal dominates over albuminurea.
Brachydactyle or hyperphlange over normal.
A great many skin diseases dominant over normal.
Diabetes incipidis ever normal.
Some forms of glaucoma over normal.
Normal over retinis pigmentosa.
Color blindness in males over normal.
Hæmophilia in males over normal.
Pseudo-hypertrophic muscular paralysis (Gower's) over normal.

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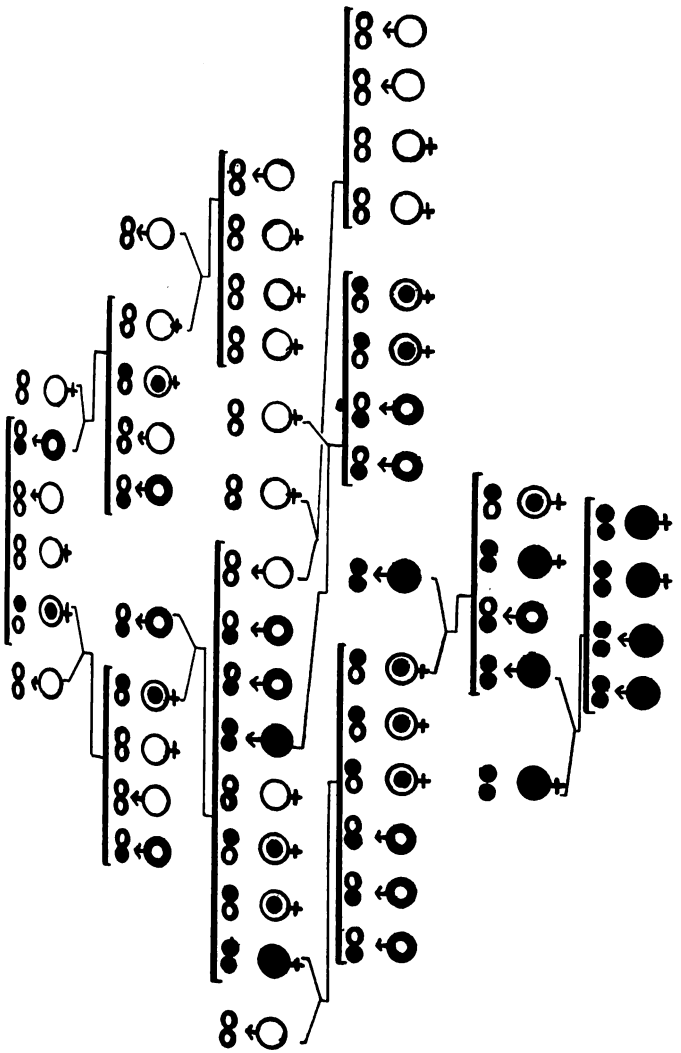

FIG. VII. (After Bateson.)
The Inheritance of Color Blindness.

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The Problems in Psychiatry.

The problems relating to psychiatry will, therefore, be much more complex from our standpoint, for in a great many types external factors play a much more important rôle in the production of psychoses than the hereditary features. Especially is this true of the types which are due to the direct effect of toxins and poisons. Such is the case, for instance, in general paralysis, where we know to a certainty that the disease is not dependent upon heredity, but upon the effects of previous infection of syphilis. Delirious conditions, exhaustion psychoses, and, to some extent, manic-depressive insanity, might be produced by external factors which largely outweigh any effect of defective inheritance.

Among the problems met with by psychiatrists will be: 1st, study of direct inheritance of certain types. 2d, the effects upon the succeeding generations of the neuropathic constitutions as expressed by eccentricities, peculiarities, alcoholism, etc., in the parents. 3d, to what extent these factors are responsible for the occurrence of various types of psychoses in the progeny. 4th, the effect of the occurrence of certain types of psychoses in the ancestors upon the production of either similar or dissimilar types in the progeny.

Part of the work of the State Hospital, at Trenton, has been to collect as much accurate data as possible of the families and ancestors of patients coming under our care. It is a tremendous task to analyze this data, and often it is impossible to come to conclusions regarding the types of psychoses occurring in ancestors where we have only the description handed down from generation to generation. One has to be extremely careful not to be biased and make the cases fit certain laws. None the less, the value of such work is apparent when we consider the marked difference in the number of individuals about whom we now obtain information to the work previously done without the assistance of field workers.

While field workers are not trained psychiatrists, at the same time, we endeavor to have them attend the staff meetings whenever they are not in the field, to get some general idea of symptoms and diagnoses. In this way they become familiar with some of the important symptoms to be looked for, the age of the onset and whether individuals recover from their disease or become chronic,

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and other points of importance. It is well that they do not know too much about diagnoses, as they might easily fall into the error of making certain diseases fit certain diagnoses, whereas, now their principal part is to collect *facts,* and then these facts are worked over and analyzed. When insufficient data is present no diagnosis is made and the case is considered as unclassified. We have been able to secure valuable data in a large number of cases, and will continue to make systematic investigations in all psychoses before giving any definite conclusions.

Rüdin states further that in the realm of psychiatry not enough work has been done to say with certainty whether these diseases follow the Mendelian laws or not, and he thinks it will be quite a long time before this question can be fully settled. He disagrees with Herron, that mental diseases do not follow any Mendelian laws, that they are neither dominant or recessive. He is inclined to think that the inheritance of dementia præcox follows recessive type, but the question cannot be settled at the present time. He is also inclined to think that manic-depressive insanity is a dominant type of inheritance. Although he thinks he has evidence which would substantiate these views, at the same time he is not willing to say that these diseases represent two separate types of inheritance. Many psychopathic states and defective conditions, he thinks, follow the same rule as in manic-depressive insanity. From the material at hand, he is inclined to think that intermediate types of inheritance, where there is a mixture in the offspring of the two distinct psychopathic conditions in the parents, is very seldom found. On the other hand, we see a certain similarity between psychopathic diseases in both parents and their offspring.

Rüdin enters into a lengthy discussion of the question of correlation, but for the present we will not get into a discussion of this principle.

He goes into a detailed discussion of the ways and means of systematic investigation of family histories of patients, and in Fig. VIII is reproduced his heredity chart. As will be seen, this method of charting differs somewhat from the method shown in Plate I. It is a question whether this is a simpler method of charting heredity than the former one. Instead of representing the matings by a line between two parents, Rüdin's method, as can be seen by his chart, is, to my mind, a better one, principally

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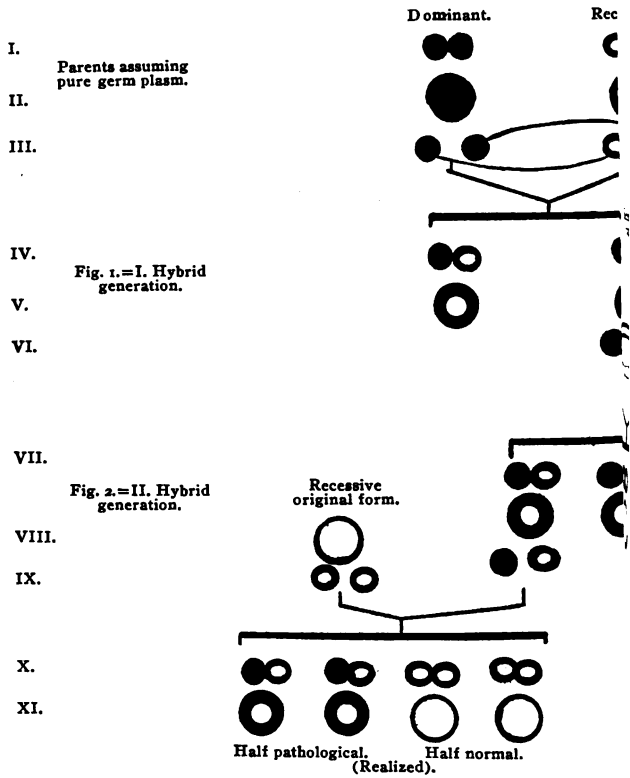
FIG.

THEORETICAL EXPLANATION OF



The following combinations are not realized in the reality, because the su
fails too in the actuality.

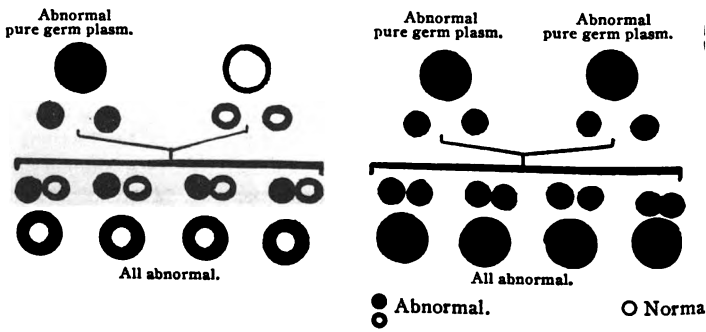


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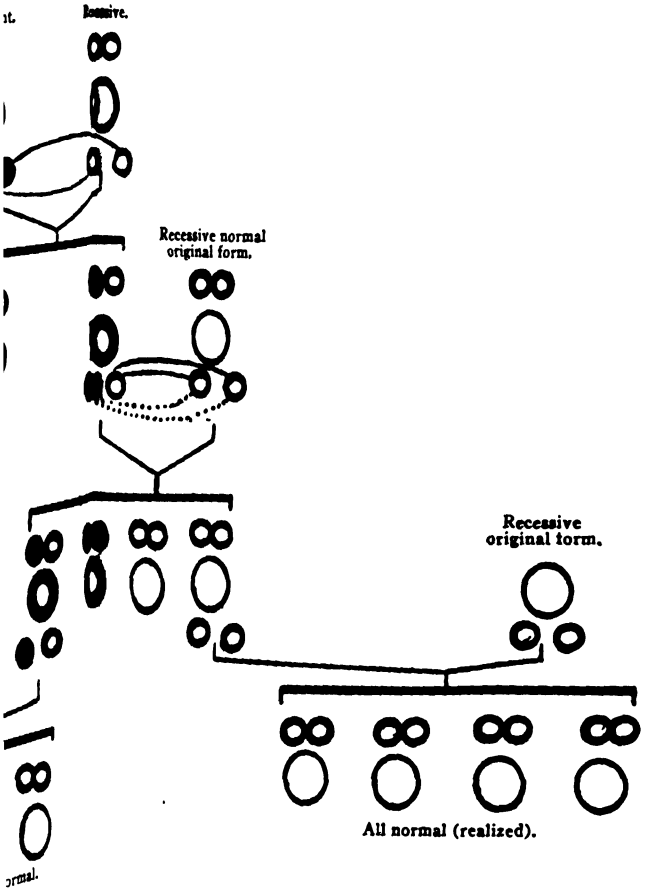
FIG IX.

XPLANATION OF THE REDUCTION PHALANGES.



, because the composition of the pure germ plasm of the abnormal and the mated abnormals

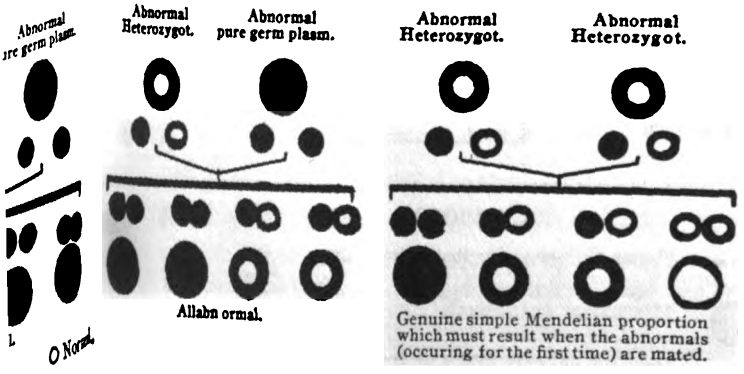


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PLATE I.

KEY TO HEREDITY CHART, TAKEN FROM EUGENICS RECORD OFFICE, BULLETIN NO. 2.

Male.	Female.	
□	○	No Data.
Red E	E	Epileptic.
Black F	F	Feeble-minded.
Green I	I	Insane.
Violet C	C	Criminalistic.

Other letters used in or around the squares or circles are:

- A — Alcoholic.
- B — Blind.
- D — Deaf.
- M — Migraneous.
- N — Normal.
- Ne. — Neurotic.
- P — Paralytic.
- Sx. — Sexually immoral.
- S — Syphilitic.
- T — Tubercular.
- W — Wanderer or confirmed runaway.

FIGURES.

Above the line—Order in the line of birth.
Above the square or circle—Individual reference number.
Below the square or circle—Age at time of death or date of birth or death.
In squares or circles—Number of individuals of that sex.

SMALL LETTERS.

b—Born.
† (d) inf.—Died in infancy.
† or (d) Died or dead.
m—Married.

LINES.

Solid—Connects married individuals and fraternities.
Dotted—Not married or illegitimate.
For display charts: Green—Paternal side; Red—Maternal side } of individual under study.
Violet—Connects related charts or individuals on more than one chart.

SYMBOLS.

— Shows patient at institution reporting.

● Miscarriage or stillbirth.

▬ Institutional care (place under symbol).

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because it allows the brothers and sisters of the family to be placed directly in series, while, on the other chart, it is found necessary to separate these brothers and sisters in order to get in all of the matings. Even when matings are represented by drop-

PLATE II.

ABBREVIATIONS FOR CHARTS FROM EUGENICS RECORD OFFICE, BULL. No. 2

To be used with full face symbols.

a, alcoholic insanity.
d, dementia precox.
g, general paralysis of the insane.
m, manic depressive insanity.
p, paranoia.
s, senile dementia.
t, traumatic insanity.

To be written on chart.

bd Bright's disease.
ca cancer.
cb childbirth.
ch chorea.
cr cripple.
df deformed.
dp dementia precox.
dt delirium tremens.
dy dropsy.
ec excentricity.
en encephalitis.
go goitre.
gp general paralysis of the insane.
hy hysteria.
id ill-defined organic disease.
kd kidney disease.
la locomotor ataxia.
md manic depressive insanity.
np neuropathic condition.
obs obesity.
pa paranoia.
pn pneumonia.
sh shiftlessness.
sm simple meningitis.
sb softening of the brain.
sco scoliosis.
sd senile dementia.
su suicide.
va varices, varicose veins.
ve vertigo.
x unknown.
? implies doubt.

ping one parent below the line, as is done at the Epileptic Village and the Training School, at Vineland, there is more or less confusion. In Rüdin's method one can see at a glance the number of brothers and sisters, and the proportion of those affected to the normals. The biological symbols used by Rüdin are not as clear as the symbols now in use, and shown in Plate I.

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We have adopted at this hospital a combination between these two methods, in which the only change is the method of mating individuals. All other symbols are the same as the original method shown in Plate I.

Rüdin further gives some very complete printed blanks to be filled out by members of the family of the patient, or by a field worker. These are very complicated, and go much into detail, and for our use are rather too bulky.

The work of Rüdin is especially valuable to those working in this field, as many valuable suggestions are given, methods outlined and the essential data to be obtained to make the work valuable. Many of the problems are discussed and methods of attack suggested.

The Work of the Trenton State Hospital.

It will not be out of place here to describe the methods used at this hospital, where we combine "field work" for the study of heredity with "after-care" work.

We have had for a year two trained field workers, supplied through the courtesy of Dr. Charles B. Davenport, to collect data in regard to hereditary factors in the family history of patients. We have not limited them to any certain line, but have insisted that all possible information in regard to relatives should be obtained. In one instance one field worker obtained information in regard to 3300 members of a family group. This family group was located in one of the northern counties of the state, and had intermarried to such an extent that only five distinct families were represented. Of this number, 76 were insane, 22 were patients in the State Hospital, at Trenton, 14 in other hospitals and 40 not committed. Following is a list of the various abnormal individuals:

Sexual offenders	50
Epileptics	5
Alcohol	46
Feebleminded	13
Cancer	19
Sarcoma	1
Blind	2
Congenital defective	1

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In practically every case investigated it is possible to obtain some information in not less than 200 members of a family, and sometimes a great many more. The field workers have found no difficulty in obtaining this information, and, without exception, they have received courteous treatment from the individuals whom they have visited. We find that the families are much interested in the work and will give all the information possible. The field worker becomes acquainted with the patient, and she talks with the patient before going to the family, and carries messages back and forth, and in this way establishes friendly relations. They spend on an average of fifteen days a month in the field. The rest of the time is spent at the hospital, writing up histories and making out charts. They do not attempt to make diagnoses, but take down all that is given by the relatives. Whenever the family physicians know anything about the family, they are visited, and their opinions also noted. Where relatives have been in the hospital, reference is made to this and a diagnosis made from the records when possible. When relatives have been in other hospitals, either in this state or in any other state, we have endeavored to obtain a copy of the records of these institutions.

The patients in the hospital are catalogued according to communities, towns, cities, etc., and when the field worker goes into a certain district she has the names of the discharged patients who are living in that community. A visit is made to these discharged patients to learn something as to their condition, and often the environment is such that it is necessary to report this to the hospital, and then advice can be given to the family as to the right method to pursue to prevent the recurrence of an attack.

This "after-care" work is a very important part of our field work, and has resulted in much good to discharged patients. Several times during the year the field workers devoted all their time to looking up discharged patients. Besides looking up the heredity in families, they inquire into the habits, domestic relations, occupation, and any other factors which are wanted by the physicians. In certain cases, where the statements of the family were questioned, the field workers had to go personally into the community, and they were able to prove or disprove these statements.

We have now collected a large number of pedigrees, averaging 200 or more to a family. It is not my purpose to go into any close

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analysis of these charts, but a few are given merely to show the progress of the work.

In Chart I we have a pedigree of a case of neurasthenia. The generations are given on the left-hand side of the chart. Each individual is numbered according to that generation. A transcript of the notes is given in this case to show the method of the work.

To summarize, we have a patient, a neurasthenic, one of three children, a sister of whom was epileptic and a brother nervous. The father was a manic-depressive case, who committed suicide, and the mother was neurotic. Father's family is apparently of good stock. The mother's family, however, shows marked defects. Maternal grandfather was a neurasthenic. Maternal grandmother was also a neurasthenic. One maternal uncle epileptic, and another alcoholic. Maternal aunt suffered from manic-depressive insanity, but recovered. An epileptic aunt has one epileptic boy. One of patient's great-great grandmothers, on the mother's side, was insane for 30 years, died at the age of 60, following the death of child, from which she did not recover. In the maternal grandparents' line there is a good deal of nervousness and neurasthenia. IV-39 was a patient in this hospital, manic-depressive insanity, recovered, and married a former patient. His wife had another attack, and recently the man committed suicide. His father was also a manic-depressive case, and committed suicide.

Following are the notes made by the field worker in this case:

H. H., neurasthenia (sexual) on constitutional basis. Admitted July 24, 1911. Age 20.

H. H., born in 1891, oldest child of John G. H. and Harriet S. H. He has always been extremely nervous since early childhood, had never been like other children and has always been a source of constant worry to his mother. He has always read "deep" books and stayed indoors to read them. Many of these books were quack medical books. He is the oldest of three children. The next child, a girl, Helen, is nervous and has suffered from convulsions after eating something which did not agree with her. It is perhaps epilepsy, as a brother of her mother suffers from epilepsy. The youngest child, a boy, is very nervous. There is a strong neuropathic tendency throughout the family, past as well as present generations. There is no insanity in the father's family, though there is a tendency toward sex perversion on the paternal grandmother's side. The patient's father himself committed suicide following two years drinking heavily after business reverses. The mother's family is all neuropathic, very few normal individuals to be found in the entire history. A great many of the people not committed were in a much more dangerous condition than the patient him-

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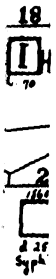

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self. The maternal grandparents and great grandparents were eccentric, a great-great grandmother was insane, a maternal aunt was insane and recovered, a maternal uncle epileptic, a maternal great aunt and uncle insane, though never committed. A second cousin insane and, in this institution, recovered. Many others neurotic.

I. Nothing known of this generation of H.

II-2. E. P., married first a man by the name of H. He was killed in the Civil War. She died at 85 of pneumonia, and was normal always. She had one daughter by this first marriage, Eliza.

III-2. E. H., married C. F. (III-I), of W., N. J. She died at the age of 94 years. They had no children, but brought up J. H., the patient's father.

II-3. J. B., E. P.'s second husband died at 45, T. B. He was normal mentally. They had six children, James, Lydia, Angeline, Harris, Jane, Martha.

III-3. James, lost at sea, age 19.

III-5. Lydia B, who is still living. She is a *sex offender*, is alcoholic, has had syphilis and is described as a hard, bad woman. She married E. F. (II-4), a politician, of N., who is dead. Cause unknown. They had one child, Lizzie.

IV-2. Lizzie, who of T. B. She married and had one child, that died at birth.

III-7. A. B., still living, married and had two children. She is described as being "common." Her children were Edward and Harriet.

IV-4. Edward, very alcoholic, died of asthma. Married.

IV-5. Harriet, very alcoholic, died of dropsy while still young. Married. No children.

III-9. H. B., died at 45 of T. B. She married E. J., of N. They had one son.

IV-7. M. J., born 1865, married, and had four children, Raymond (LV-2-5), Perry, Anna May, Mildred, all normal children.

III-10. Jane, died at 45 of T. B.

III-11. M. B., died very young of pneumonia. She married.

III-12. E. H., of N. He died of old age at 80. He married again and had four children. Nothing known of them. They had one son, J. H., the patient's father.

IV-9. J. H., born 1850. He was a newspaper man, and, following business reverses, took to drinking heavily for two years. He quit drinking, but felt the disgrace so keenly he *committed suicide*. He must have been temporarily insane, for he had made all his plans for the next day—died 1899—suicide. He married Harriet S.

IV-15. Charles, born 1870, works on railroad, is normal, but drinks quite heavily.

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IV-16. Louise S., born 1873. She was always nervous, even as a child. She was finally committed to *Hospital*, 1896. She remained there three or four months, but it was a year before she fully recovered. *Diagnosis, melancholia.* She married S. C., a school principal of W. They have had four children, Mildred, Frances, Cecil, and a baby that died at 11 days.

V-14. Mildred, born 1895, very *nervous.*

V-15. Frances, born 1901.

V-16. Boy, died at 11 days.

V-17. Cecil, born 1907, normal.

IV-18. David S., born 1860. Periodically alcoholic. He married Ella K., a first cousin, who died of T. B. at 35 years. They had three children, Clarence, Tuttle, Lester.

V-18. Clarence, born 1886, a government life saver. He is delicate, but normal.

V-19. He married G. T. They have one daughter.

VI. Ruth, born 1909.

V-20. Tuttle, died of diphtheria at 2 years.

V-21. Lester, born 1890, a farmer at F. He had *severe convulsions* up to the time he was 14 years. None since.

I-1. S. L., died very old. Married H. T.

I-2. H. T., *insane.* She went insane following the death by drowning of her 4-year-old daughter. She was kept at home and was mildly demented. Died at 60. They had three children, Margaret, Charles and the girl who was drowned.

II-5. Margaret L., died at 75 of paralysis. She married (II-4) F. C., a miller of F. He was of rather weak character and *was peculiar.* Died at 85 of old age. They had four children, Hannah, Mary, John, Anna.

III-15. Hannah (patient's grandmother), married C. S.

III-16. Mary, died at 60 of *cancer* of stomach. Married W. K. (III-17), who died of pneumonia. They had three children, Ella, Frank, Edward.

IV-9. E. K., married her first cousin, D. S. (IV-18). She died at 35 of T. B.

IV-20. Frank, living, normal.

IV-21. Edward, died at 25 in 1885, after 3 or 4 years sickness. He lost use of limbs, flesh rotted away, thinks it may have been syphilis.

III-18. John, died at 70 of heart failure. *He told lies, did not seem to know they were lies.* Married H. B., who is still living. No children.

III-20. Anna C. *She is subject to depressed spells. Has always posed as a martyr,* knowing she will be rewarded hereafter. Tells malicious lies about the neighbors and friends, seemingly believing them to be true.

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II-8. D. S., born in 1808, died in 1850 of pneumonia. He was always nervous and peculiar. Suffered from *insomnia* always. He married (II-9) H. H., who died of old age at 86. She was normal, though her family is said to have been queer. They had fourteen children, Charles, Kate, Elizabeth, Jacob, Anna, Harriet, William, Helen, and six that died in infancy.

III-14. Charles (patient's grandfather).

III-21. Jacob, born 1832, still living. He is a newspaper man, an editor at times. He has been *neurotic* for years. Has suffered from *insomnia* and is *childish now*. He married Martha J. M., who is very nervous. Still living. They had nine children, Robert, Albert, Warren, and six that died in infancy.

IV. H. S., born in H. in 1866, a daughter of C., and H. S. She is of a highly *nervous temperament*. Worries over H., over the other children, etc. She recognizes plainly the neurotic tendency in the family. They have three children, Hamilton, Helen and Jack.

V-6. H. H., born 1891. *Admitted to N. J. S. H.* in July, 1911, diagnosed *neurasthenia* (sexual) *on constitutional basis*.

V-7. H. H., born 1892. Nervous temperament. She has had severe convulsions since infancy whenever anything she eats disagrees with her. Had one severe convulsion, summer, 1911. *Epilepsy*.

V-8. J. H., born 1897. Is extremely *nervous*. Had convulsions while teething.

III-14. C. S., born 1835. Lived in H., a mason by trade. He has always been ugly and *irritable, "devilish"* at times. Seemed to try to torment his family, drove his wife nearly insane, with his tormenting. Has been a steady drinker all his adult life. He married (III-15).

III-15. H. C., of F. She was one of four children. She was born in 1834, died in 1905 of dropsy and heart trouble. She was very nervous, almost, if not, insane, at times, when she became so excited that she had to be restrained. She and C. S. had six children, Harriet, Walter, Jennie, Charles, Louise, David.

IV-11. Walter, born in 1864. He is an electrician in N. Has suffered from *epilepsy* all his life. Is rather irritable and hard to get along with. He married L. H., who is strong and well. They have two sons, George and Ben.

V-9. George, born 1890, had severe convulsions as a child, one arm has been paralyzed since he was 6 or 7 years of age. *Epilepsy (?)*.

V-10. Bert, born 1892, normal.

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IV-13. Jennie S., born 1889. She is normal in every way. Married Richard N., of F., N. J., painter and decorator. Three children, Joseph, Ethel, Richard.

V-11. Joseph, born 1894.

V-12. Ethel, born 1897.

V-13. Richard, born 1902.

IV-24. Robert, born 1860. A musician in P. He married J. V., of L. No children.

IV-25. Albert, died at 25. He was a dentist, and became a morphine fiend, which drug probably caused his death.

IV-26. Warren, born 1886, a farmer. Very nervous. Married. No children.

III-23. Elizabeth, born 1826. *Very nervous.* Married E. T., who died of Bright's disease. No children.

III-25, Kate, still living. Married R. O., of H., N. J. They had several children, only two lived to grow up, Harry and Richard.

IV-31. Harry, a traveling man, married M. S., who died of stomach trouble. They had two children, a girl and a boy.

IV-33. R. O., died when a young man, of Bright's disease. He was a doctor.

III-27. A. S., normal. Died at 70 years of old age. She married T. T., who died of pneumonia. They had four children, Melville, Kate, Frank, Edward.

IV-31. Melville T, died of stomach trouble. He married M. C. They had two children, Melville and Anna.

IV-33. Kate, very nervous, married C. F., who died of appendicitis. They had two children, Norman and Charles.

IV-37. Frank, normal, married Olive —. They have 5 children.

III-29. William, died of T. B., while still a young man.

III-32. Harriet S., died of uræmic poisoning. She was always *neurotic,* always doctoring for her nerves. If she had not been so well taken care of would probably have been a neurasthenic case. She married W. S., a school principal, who *committed suicide* at 60 years. They had two children, Forrest and Lyle.

IV-39. F. S., admitted to N. J. S. H. in 1907. Discharged in 1908. A case of manic-depressive insanity, manic attack. Died March, 1912, suicide. He married E. D. C., whom he met while in the hospital. She was admitted in 1906, discharged in 1908, manic-depressive insanity, depressed type. Readmitted Febuary, 1912, M. D. I., manic type.

IV-41. L. S., born in 1875. He is a civil engineer, and is rather *eccentric.*

III-33. H. S., born in 1850. She is *very nervous.* Unmarried.

Chart II is an illustration of the method charting that is used by the Eugenics Record Office.

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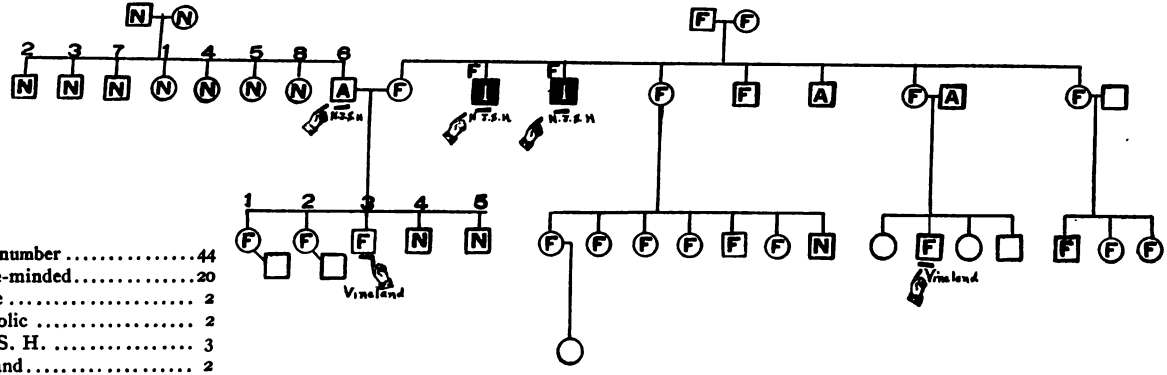
CHART II.



Total number	44
Feeble-minded	20
Insane	2
Alcoholic	2
N. J. S. H.	3
Vineland	2

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There are 42 individuals in this chart, whereas, Chart I has over 70. This shows the inheritance through marriage of two feebleminded individuals. Nine children were born to this family, all of which are feebleminded, one alcoholic. Two of these children are inmates of this hospital at present. One girl of this feebleminded pair married a man, who was an alcoholic, but his family was normal. As the result of this union three are feebleminded and two normal. One feebleminded child is in Vineland. Another girl married a man, who was an alcoholic, and has one feebleminded child at Vineland. Four members of this group are now cared for by state institutions. There are altogether 22 feebleminded progeny from the original mating.

Chart III is a summary which represents 200 individuals, 15 of which were insane. Ten were in the Trenton State Hospital, and 12 were tubercular, three neurotic, one feebleminded. Seventeen died in infancy. Nineteen were alcoholic. Of the psychoses, we have six manic depressives, four dementia præcox, one questionable dementia præcox, one senile paranoid condition, one imbecility, one feebleminded and one unclassified. The paternal line is fairly good, with the exception of alcoholism. The maternal line, on the other hand, is very much affected. The mother is neurotic. One sister was a border-line case. There are two sisters manic-depressive. The mother had nine living children. Three died in infancy, making a family of 12. The mother was insane, had manic-depressive insanity, from which she recovered, and is now living at the age of 83. The father was alcoholic, had a sister who was a senile paranoid condition, and a brother dementia præcox. This brother had two children, both of which are dementia præcox, and inmates of this hospital. He married a woman put down as peculiar. A maternal cousin is a case of dementia præcox in this hospital. In this family, out of five individuals who were insane in the grandparents or great grandparents, only two were in institutions, while all the cases that were insane in the parents' children were committed to institutions. This fact will be found to run through all our charts, and one can conclude that in the preceding generations the percentage of cases who were insane and who were committed to an institution was much smaller than the percentage of the same class in present generation.

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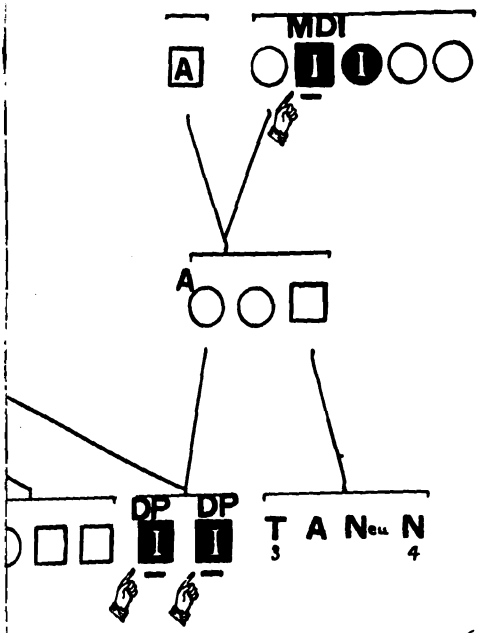

.....	200	M. d. i.....	6
.....	15	D. p.	4
H.....	10	D. p. ?	1
.....	12	Sen. paranoid	1
.....	3	Imbecile insane.....	1
inded.....	1	Feeble-minded insane...	1
.....	1	Unclassified	1
ancy	17		15
c.....	12	Patients N. J. S. H.....	10

aunts m. d. i.; 3 m. 2nd cousins d. p., 1 m. d. i.
anoid.

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This has an important bearing on the apparent increase in the number of insane in institutions at present, for I think I can be definitely shown that a large proportion of those who were insane in the community in previous generations were kept at home.

Chart IV represents a family of 371 members, in which 73 were abnormal in the following proportions: Insane, 14. Alcoholic, six. Sexual offenders, 11. Syphilitic, two. Blind, two. Cancer, five. Epileptic, one. Deaf mutes, two. Congenital, two. Constitutional defects, two. Neurotics, 10.

Diagnoses of the insane are as follows:

Alcoholic insanity	1
Senile dementia	2
Senile Psychoses	3
Senile trauma	1
Senile defective	1
Arteriosclerotic brain disease	3
Manic-depressive insanity	2
Psychasthenia	1

The patient represented by three asterisks was psychasthenic. She has six brothers and sisters. Two brothers, twins, and neurotic. Two sisters are neurotic, and one sister insane, with diagnosis of hysteria. We find that the mother was a constitutional defective. There were two brothers and sisters, each manic-depressive insanity, and the maternal grandparents were both senile psychoses. The father was neurotic or psychopathic sexual individual. He was married three times. He had two sisters. One was senile and the other arteriosclerotic. One brother suffered from senile psychosis, due to head trauma, at the age of 50. There were 13 brothers and sisters in this family. Three could be classed with the senile psychoses, and we find that the father of this family died at the age of 60, of senile dementia, while the mother came apparently from normal stock.

This chart illustrates a very important point, that is, the hereditary features of senile psychoses. Here the diagnosis is not made merely on old age, because there are in this family thirteen normal individuals living at the ages of 70, 93, 60 and 85. This tendency to senility in this family seems to be in the proportion of three to twelve, 13 children dying in infancy.

Another significant fact is the tendency in succeeding generations to develop manic-depressive insanity and psychopathic states.

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Chart V illustrates inheritance in a case of dementia præcox. The patient was one of six children, three of which died in infancy, one was neurotic and one normal. The father was a case of manic-depressive insanity, recovered, living at the age of 62. He is one of six children. One brother has arteriosclerotic brain disease, three normal, one sister neurotic. Patient's maternal grandparents, the grandmother's line, is apparently normal. His paternal grandfather was a constitutional defective, died at 66, of arteriosclerosis. The grandfather has 12 brothers and sisters. One brother is put down as melancholy. One died at the age of 42, had sunstroke, and died insane. One was a constitutional defective, died at the age of 19. There were five affected individuals in this group of 13. Seven could be put down as normal, one neurotic. The mother of the patient was neurotic. She was one of fifteen children, seven of which died in infancy. Three were normal and one had harelip. The maternal grandmother was put down as insane. The maternal grandfather apparently normal line. We have a summing up, then, of a total of two hundred ninety-two. Insane, fifteen. Epileptics, four. Feeble-minded, one. Neurotic, five. Harelip, one. Syphilis, two. Sexual offenders, two.

Diagnosis of those insane are as follows:

Constitutional defective	2
Melancholia	1
Dementia præcox	1
Psychoses following sunstroke	1
Hysteria	1
Manic-depressive insanity	3
Arteriosclerosis	2
Depression	1
Feebleminded	1
Unknown	2

Conclusions.

We have not attempted to analyze these charts carefully, but they are given merely to illustrate the progress of the work, and also to illustrate what a difficult task the analysis of these charts means. Frequently, when a point in question is necessary, the field worker visits the family again to clear up these disputed points.

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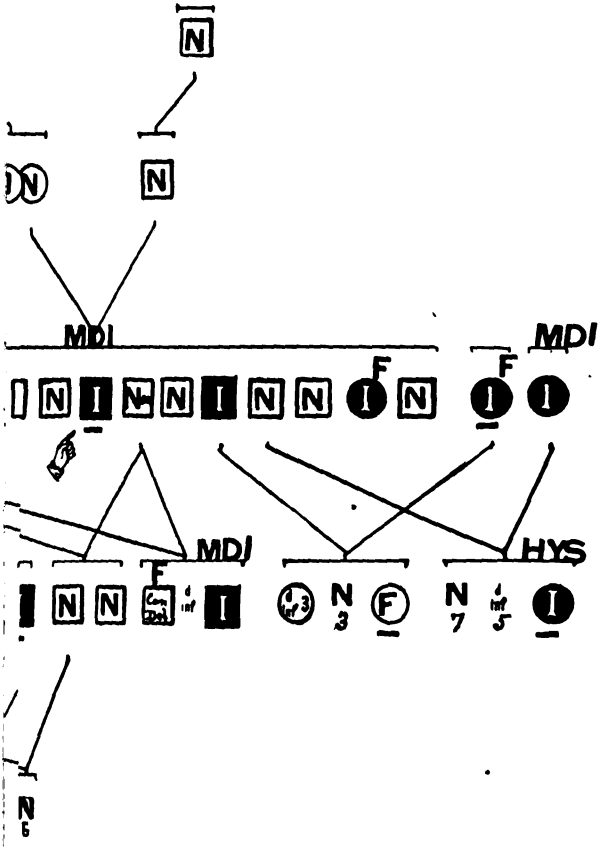
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In this paper no attempt has been made to give any definite conclusions regarding the hereditary factors in the various psychoses. We have reviewed some of the most important work done so far, and outlined the methods to be pursued to obtain the best results in future work.

We have also spoken of some of the difficulties to be met with, especially when analyzing the material as it comes from the field workers. It is again well to emphasize the necessity of maintaining an open mind regarding these problems, and not to be too biased in attempting to make the facts fit the Mendelian laws. At the same time, we recognize that a comprehensive knowledge of the laws will assist us materially in analyzing our data and in arriving at practical conclusions. We also feel that much valuable material will be obtained which will aid us in solving the problems of prophylaxis and prevention of mental diseases. We hope that other hospitals and institutions will adopt this method of studying these important questions.

I wish to express my thanks to Miss Florence I. Orr and Miss Elizabeth P. Moore (field workers at this hospital) for their valuable assistance in making charts and furnishing valuable data for this paper.

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UNILATERAL HYPERTROPHY, INVOLVING THE ENTIRE LEFT SIDE OF THE BODY.*

By PETER BASSOE, M. D., Chicago.

The patient, an Italian boy, sixteen years old, was admitted to my service in the Presbyterian Hospital on April 25, 1911. He came on account of pain in the right foot, apparently due to tendon synovitis and slight sprain of the ankle, brought on by working a foot-machine in a shop.

Family History.—The father, mother, a brother and two sisters are well, of ordinary size, and without deformity. There is no history of any case of similar or other deformity in the family.

Personal History.—There was nothing unusual about his birth and early mental or physical development except that it was noted at birth that everything on the left side was larger. It seems from the statement of the relatives that the proportion between the two sides has always been about the same. He had scarlet fever in early childhood.

Examination.—A glance at the accompanying illustration will show the marked prominence of the left side of the face and the general enlargement of every part of the left side of the body. The prominence of the cheek appears to be due to an increase in subcutaneous fat. It will be noted that the left arm and leg are considerably longer than the right, and that both feet are decidedly large in proportion to the rest of the body. The following measurements show how the hypertrophy has involved practically everything measurable on the left side:

Measurements.—Total height, 152 cm. (4 feet, 11⅞ inches). Height of right shoulder, 124 cm.; height of right iliac crest, 89.5 cm.; circumference of neck, 29 cm.; the circumference of the head is 57.5 cm. The distance from the inion to the glabella horizontally around the right side is 26 cm.; around the left side, 27.5 cm.

*This paper forms contribution number two of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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	Right side.	Left side.
	cm.	cm.
Width of nose across nostrils	2	2.4
Width of tongue	2	2.5
Circumference of chest	34.5	37.5
Acromion to styloid process of radius	45	45.8
Acromion to external condyle	27	27.8
Olecranon to styloid process	23	23
Length of hand to tip of middle finger	16.5	18.5
Length of thumb	6	6.5
Length of index finger	9	10
Length of middle finger	9.5	11
Length of ring finger	9	10.1
Length of little finger	7.2	8
Circumference of arm	17[illegible]8	20
Circumference of forearm	20	21
Circumference of wrist	35	14.3
Circumference of hand	18	19.5
Anterior superior spine to inner malleolus	74	78.5
Anterior superior spine to ext. condyle of femur.	37.5	40
Length of foot	24.7	26.3
Length of big toe	7	7.6
Circumference of thigh at middle	36	38.5
Circumference of calf	29.5	30.5[1]

On inspecting the mouth it is found that the left alveolar process is fully twice as broad as the right one. The left upper incisors are broader and longer than the right ones, while the difference in the lower incisors is slight. All of the left molars are larger than the right. The left halves of the nose and tongue are distinctly enlarged and the left ear is decidedly larger than the right, as may be seen in the illustrations.

Examination of the internal organs does not show any abnormality; at least, there is no transposition. That the left radial artery is considerably larger than the right seems certain, as the pulse is decidedly fuller on the left side.

The thyroid is exceedingly small, scarcely palpable. There is no substernal dullness to indicate enlargement of the thymus.

The genitalia are rather small, though not abnormally so for his age. The penis is 7 cm. long. Both testicles are descended.

[1] Since this was written the patient has been under observation and was last examined on June 25, 1912. He has grown considerably and the left side of the face and the feet are more prominent than ever. Height now 161 cm. (5 feet 3 inches); circumference of head 58.3 cm.; length of foot, right 28 cm., left 29 cm.; anterior superior spine to inner malleolus right 74 cm., left 78.5 cm.

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The tendon reflexes are normal. Motion and sensation are normal. The pupils react normally and the fundi are normal. The facial muscles on the left side appear to functionate normally and react normally to the faradic and galvanic current. A slightly stronger current is, however, required on the left side, probably on account of the increased thickness of the subcutaneous tissue.

X-ray pictures of the head show an apparently normal sella turcica and normal thickness and conformation of the bones. X-ray pictures of the upper and lower extremities indicate that the process of ossification has reached a stage which must be considered normal for his age.

Description of the Skin by Dr. Oliver S. Ormsby.—The entire cutaneous envelope shows abnormalities of different types. The chief changes consist in hyperæmic areas, many of which are so well developed as to constitute mild vascular nævi, the so-called "port-wine" spots; a general mild grade of xerosis on the trunk and extremities; a seborrhea of the face and scalp; on the lower limbs bands and streaks of moderate hyperkeratosis; and, finally, pigment changes.

The entire skin shows a purplish red mottling. On the back, at the junction of the cervical and dorsal regions, is a superficial vesicular nævus, circular in outline, and 2½ x 1¾ inches in size. This patch is erythematous and occupied by many telangiectatic blood-vessels.

At the lower end of the spine, over the lower dorsal region, a similar area, 2½ x 1½ inches, is present. In this region the redness is not diffuse but is made up of several smaller reddish macules. Over the sacral region is a similar one, about 1 inch in diameter.

On the dorsal surface of the left hand quite distinct loss of pigment is noted in areas. Both thighs have the erythematous mottling described above. Below the knees this condition becomes diffuse, the major portion of the skin being pink. Moderate hyperkeratosis is present on the dorsal surface of the left hand. Quite marked xerosis is present.

The skin of the face shows comedones, oily seborrhea, and a few acne papules. The scalp shows oily seborrhea. The latter conditions are more pronounced on the left side. Hypertrichosis is decidedly more marked on the left side.

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The mucous membrane of the mouth is slightly œdematous. One small pea-sized venous angioma on the upper lip is present on the affected side.

An interesting feature is the suggestion on the lower limbs of linear nævi, due to the fact that bands of smooth normal skin alternate with bands which are moderately hyperkeratatic. These extend over the entire limb in continuous lines from the hip to the foot.

The entire picture, therefore, presents mild congenital abnormalities.

Diagnosis.—The essential feature in this case is the relative enlargement of the left side of the body, which has existed since birth. The boy's general health is good, and the only trouble caused by the abnormal condition is the mechanical inconvenience of having one leg longer than the other. The first disease that comes to one's mind on considering the case naturally is acromegaly, especially as both feet are enlarged. But one is soon convinced that the resemblance is only superficial. Acromegaly is an acquired condition, and the patient suffering from it is not merely deformed, but actually ill, presenting also some of the symptoms of brain tumor and particularly disturbances of vision, due to the proximity of the hypophysis to the optic chiasm. This boy is deformed from birth and aside from enlargement of the feet does not present the features of acromegaly. The absence of enlargement of the sella turcica, as indicated by the X-ray, and the absence of visual disturbances speak against hypophysis disease, which always exists in acromegaly. (The reported exceptions do not bear close criticism.)

The case, therefore, must be looked upon as a congenital deformity, a hyperplasia or overgrowth of the entire left side, and additional overgrowth of the right foot. That the case is not one of hypoplasia of the right side is plain when we consider that the left side presents many abnormal features, such as the enlargement of the cheek, gums and teeth, and the marked nevoid condition of the skin. The condition may be labelled "unilateral hypertrophy," "unilateral gigantism," or, using a Greek term, "hemimacrosomia."

Cases in the Literature.—A fair number of very similar cases have been reported, so it is possible to make some generalizations. Heredity plays no rôle. The male sex and the right side seem

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to predominate. The hypertrophic side is generally the stronger. Nævi and pigmentation of the skin are very frequently present. The hypertrophy mainly involves the subcutaneous tissues, muscles and bones, namely, tissues of mesoblastic origin. In the few cases in which post-mortem examination has been made, no brain or other lesion has been found which throws any light on the cause of the condition. In a few of the cases enlargement of a few fingers and toes on the otherwise normal side was noted, so the enlargement of the entire right foot in the present case is not an absolutely unique feature.

The early literature is fully reviewed in a monograph by Trelat and Monod. Arnheim gives the bibliography up to 1898, and reports the case of a female child seen at the age of four weeks. The entire right side was involved in the hypertrophy. There were telangiectasia of the skin and a nævus pilosus on the back. The girl never learned to walk, and died at the age of 2¼ years. Necropsy revealed in still further detail the uniform enlargement of all structures on the right side, and also showed evidence of rickets, bronchiectasis, emphysema, and hypertrophy and dilatation of the heart. The cause of death was bronchopneumonia. Another case with necropsy is related by Sophie Hornstein, that of a girl, 2½ months old, involving the right side.

A recently reported case, with necropsy, is that of Cagiati. A female child which died of enteritis at 11 months showed enlargement of the entire right side from birth. There were nævi of the skin. The brain showed no gross change and the thyroid was normal. The left ventricle was hypertrophied, and the carotid, femoral, radial and other arteries were wider and thicker on the left side. The left lung was larger than the right, and all the bones on the left side were relatively enlarged.

There is a considerable number of clinical reports of very similar cases. Nævoid conditions are the rule. Of special features, it may be mentioned that in Brüning's case, as well as one described by P. Wagner, only the soft parts seemed to be involved. In the former there was syndactylism, and the index and middle fingers on the normal side were also enlarged. Devouges describes a boy, 17 years old, with enlargement of the entire right side, and varices and nævi on the right leg and hand, in which the first three fingers and toes were disproportionately long and the

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same fingers and toes on the otherwise normal left side were moderately enlarged. There was no appreciable difference in radial pulse on the two sides.

In Reissmann's case the left side of the head and the right side of the rest of the body were enlarged.

The following cases probably also belong in this group. Foucher's case was one of enlargement of the entire left side, with varices and a condition resembling elephantiasis of the left leg. Two fingers on the left side were disproportionately large. Chassaignac's case was that of a boy, 18 years old, with enlargement of the right side and varices. Wittelshöfer gives a very meagre description, but a good picture of a girl observed in Billroth's clinic. The right arm and leg were enlarged, the first three toes on the right foot disproportionately so, and the second and third toes were grown together. In Fischer's case the hypertrophic right side was the weaker one, and the head not involved, but the usual varicose condition was present. The most recently reported case is that of Max Schiller, of a boy 11 years old, with congenital enlargement of the left side, and also umbilical hernia and undescended testicle.[2]

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ILLUSTRATIONS.

FIG. 1.—Hemihypertrophy of face.
FIG. 2.—Showing increased length of extremities on left side and tilting of pelvis.
FIG. 3.—Both feet.

[2] Still later is an exhaustive article by Stier (Deut. Zeitsch. f. Nervenheilk, 1912, Vol. 44, p. 21) with review of the entire literature of hemihypertrophy and hemiatrophy.

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FIG. 3.

FIG. 2.

FIG. 1.

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A PLAN FOR INDEXING CASES IN HOSPITALS FOR THE INSANE.

SECOND PAPER.

BY WILLIAM A. WHITE, M. D.,
AND
FRANCIS M. BARNES, JR., M. D.

It is now somewhat over a year ago that our first paper appeared in this Journal (1911, LXVII, 597) concerning a scheme which had been adopted at the Government Hospital for the Insane, whereby cases might be catalogued according to diagnosis in such a manner that the clinical records might be rendered more easily and readily accessible for the purpose of subsequent research. In brief, this plan was to classify the cases after the individual's hospital career had been terminated, either by death or discharge, in three main sections: First, the mental diagnosis as made clinically; second, the clinically diagnosticated physical condition; and third, the pathologic findings. These three sections, actually constituting three case catalogues, are cross-indexed with each other so that data concerning a given case may be obtained by approaching from any one of the three directions. Regarding the nomenclature, the guiding principle was "*that the term used in each instance, while being as specific as is consistent with facts, shall be broad enough to surely include the condition.*"

During the time since this plan was adopted, experience has brought to light many of the shortcomings and difficulties associated with the practical working of such a cataloguing scheme. It is to the hope that others may gain from this experience that this second paper owes its origin. It has seemed advisable to include, under the second section, the clinical diagnosis, more than the physical disorder related to the mental state. The catalogue is primarily concerned with the form of mental disorders, and considerable confusion and difficulty has arisen by endeavoring to include too much under the mental diagnosis. For instance, in the infective-exhaustive and toxic psychosis, and in that associated with organic diseases of the brain, it is desirable for several

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reasons, largely of a practical nature, to record the underlying causal physical disease or toxic agent as a clinical diagnosis. This will become clear on reference to Sections I, II and III of the classification.

The principal difficulty has been with the mental diagnosis. In the first place, no fixed or even approximately definite nomenclature was in use, with the result that a given mental disorder might be characterized by a half dozen of the staff physicians by as many different, though synonymous, diagnoses. To the same physician the constitutional psychopathy of to-day becomes a psychopathic personality to-morrow; or, the precox, forme fruste, an abortive or simple precox. To permit an index to express even approximately accurately the diagnostic opinions of a staff comprised of a score or more of physicians, some uniform nomenclature becomes essential. Even though we look upon a classification of mental disorders as a necessary evil, it is obvious that for practical purposes some form of such evil is unavoidable. Then we can only strive to reduce it to the lowest degree.

The classification which is given in the following pages has been formed upon the basis of experience in handling the material of this hospital, primarily considering the mental diagnoses. No pretence of originality is made, hints and suggestions derived from varied sources have been incorporated, without mention, in the several instances. Nor is this proposed as a scientific grouping of mental disorders, utilitarian and practical objects have been the goal sought after throughout its construction. It is fully recognized, however, that perhaps very rarely may the diagnosis of an abnormal mental state be made with immutable finality, and, as a direct corollary to this, that no such scheme of classification can be considered to be permanently fixed or settled. Yet it is necessary from the practical viewpoint to have some skeletal form for guiding purposes, in order that the greatest possible uniformity may be attained in expressing diagnostic opinions. To secure as uniform interpretation as possible, in the more doubtful instances brief explanatory notes have been interpolated.

And, finally, this scheme is to serve merely as an outline and guide, but in each case the mental disorder should be designated, whenever possible, in accordance with the terminology herein employed.

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MENTAL DIAGNOSES.

I. INFECTIVE-EXHAUSTIVE PSYCHOSIS:

Owing to the difficulty of determining in many cases at which point the abnormal mental symptoms due to the infective process cease, and those due secondarily to the exhaustion resultant upon the infection begin, it seems desirable to use the broader term infective-exhaustive, looking upon the psychosis as the mental reaction. In many instances, it will be difficult, or even impossible, to be more specific, yet certain quite definite clinical types are recognizable. Likewise it is difficult to separate in every instance the psychosis as associated etiologically with the fever or the infection itself and its consequent secondary exhaustion. We may, however, recognize clinically several fairly well-defined forms:

1. *Febrile Psychosis:*

In certain instances the mental symptoms develop quite clearly in connection with the fever. Such is often the case in typhoid fever, erysipelas, acute articular rheumatism, scarlet fever, small-pox, malaria, cholera and septic diseases. The psychosis may develop at the onset of the fever, when it has reached the fastigium, or during the period of defervescence,

2. *Infection Psychosis:*

Here the mental symptoms may develop more closely in association with the infective process during a comparatively afebrile period. They may be manifested clinically in epileptiform excitements, twilight states, hallucinatory and catatonic conditions, etc. Here too should be included the acute infections having a specific localization in the central nervous system, such as suppurative and tubercular meningitis, hydrophobia, chorea minor, etc.

3. *Acute Confusional Psychosis:*

The so-called amentia of Meynert. The term acute confusional psychosis is preferable and is to be used to designate fairly definite symptom complexes while the term confusional state is reserved to characterize less definite conditions dependent possibly upon various etiologic moments, usually but vaguely determinable and therefore included in a subgroup under the general heading "Undifferentiated Psychosis." (See XVI.)

4. *Symptomatic Psychosis:*

The foregoing subgroups are in a sense symptomatic psychoses (Bonhoeffer) but it is desired to retain this term to characterize those mental disorders manifested as episodes of excitement, depression, delirium, etc., which develop more closely in relation with general or constitutional disorders and diseases of the internal organs. Here we have the cachectic and anemic conditions due to carcinoma, etc., cardiac disease, uremia, diabetes, gastro-intestinal disease, etc.

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The classification of Group I is almost entirely of the etiologic type and therefore the causative factor should be recorded in the clinical diagnosis.

II. Toxic Psychosis:

Including such as are not due to agencies of the nature of those already included under the above. It is here to be borne in mind that the toxemia often leads to a condition of exhaustion. This, though it may modify the symptomatology, is really but secondary. To employ an additional term to cover this factor, *e. g.*, toxic-exhaustive, is undesirable.

1. *Thyreogenic Psychosis:*

a. *Myxedematous.*

b. *Exophthalmic.*

We (in Washington) meet with so comparatively few instances of thyreogenic psychosis that it seems unnecessary to mention the two types separately in the mental diagnosis—the type is indicated to better advantage in the clinical diagnosis as associated with myxedematous or exophthalmic goiter.

2. *Alcoholic Psychosis:*

A general term for such cases where though recognized that alcohol is the etiologic agent in the production of the toxic psychosis, yet for various reasons its type cannot be stated. An attempt should be made in every instance to indicate the clinical type.

Among the alcoholic psychoses the more definite clinically recognizable types are:

a. *Pathologic Alcoholic Intoxication.*

Psychotic states appearing in close association with the acute intoxication and of very short duration.

b. *Delirium Tremens.*

c. *Acute Alcoholic Hallucinosis.*

d. *Chronic Alcoholic Hallucinosis.*

e. *Korsakow's Psychosis.*

f. *Alcoholic Deterioration.*

The term deterioration is here used to express more than dementia, *i. e.*, an acquired defect not necessarily predominantly involving the intellectual sphere.

g. *Alcoholic Pseudo-Paresis.*

h. *Alcoholic Paranoid State.*

The acute delusional paranoid state as well as Eifersuchtswahn are included within the meaning of this term.

3. (*Other*) *Toxic Psychosis* (not included in the foregoing):

Under this general heading, toxic psychosis, include such as are due to drugs, as morphin, cocain, bromin, etc., lead, gas (carbon monoxide, etc.) and foods (ptomaine, pellagra, etc.). It seems best here to mention the toxic agent under the clinical

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diagnosis. For example, take a case where morphin had acted as the toxic agent in the production of the psychosis—the mental diagnosis should be "toxic psychosis" the clinical "morphinism."

III. PSYCHOSIS ASSOCIATED WITH ORGANIC BRAIN DISEASE:

Excepting such clinical entities as paresis, etc., the organic condition of the brain with which the psychosis is associated (symptomatically) should be recorded in the clinical diagnosis.

1. *Chronic Progressive Chorea* (Huntington).
2. *Sclerosis, Multiple.*
3. *Arteriosclerosis, cerebral.*

(These three conditions should be indicated in the clinical diagnosis.)

The psychoses associated with cerebral vascular changes present themselves in several clinical forms which often may be diagnosticated intra vitam with a fair degree of certainty. Among these the better recognized may be included under the following subheadings, such subdivision being desired where possible.

a. *Deterioration:*

A more or less generalized vascular disease of the cerebral arteries associated with a lacunar demential process.

As an especial type of "a" we find the group of post-apoplectic deteriorations. These may be associated with various paralyses and other neurologic disturbances which may be recorded in the clinical diagnosis.

b. *Paranoid State.*
c. *Excitement.*
d. *Depression.*
e. *Confusion.*

4. *Brain Syphilis:*

The mental symptoms associated with syphilitic lesions of the brain are varied but possibly clinically there are symptomatologic groupings which may be well differentiated as follows:

a. *Neurasthenic Type.*
b. *Manic (or Depressed) Type.*
c. *Paranoid Type.*
d. *Deteriorating Type.*
e. *Pseudo-Paretic Type.*

Syphilis should be made a clinical diagnosis, but not unless it is directly associated with the mental state. The fact that there is a positive Wassermann in the blood serum is not sufficient evidence on which to base a diagnosis of cerebral syphilis. Clinically we cannot with accuracy do more than recognize the existence of some abnormal process dependent upon syphilis of the brain. The pathological examination alone can define the nature of the anatomical substratum. With such uncertainty and

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limitation of clinical possibility it is unwise to attempt clinically any final anatomic correlation.

5. *Neoplasm* (benign or malignant).

IV. TRAUMATIC PSYCHOSIS:

The term should not be employed to characterize such mental states as are produced by injury other than to the head or where this head trauma has merely been an etiologic factor in the precipitation of another definite psychosis, such as paresis, dementia precox, etc.

Clinically we recognize a

1. *Post Traumatic Delirium.*
2. *Post Traumatic Constitution.*

An acquired generalized defect of psychopathic character.

3. *Post Traumatic Deterioration.*

Often accompanied by many evidences of focal lesion such as aphasia, epilepsy, etc.

V. PARESIS:

1. *Adult Form.*
2. *Juvenile Form.*
3. *Tabetic Form* (*i. e.*, tabo-paresis).

VI. PRESENILE AND SENILE PSYCHOSIS:

These are often associated with a physiologic senility, possibly somewhat premature. They need especially to be differentiated from those mentally abnormal conditions associated with arteriosclerosis. Age alone is not to be taken as the sole criterion, some senile psychoses, *e. g.*, Alzheimer's Disease, may have their onset in the fourth decade, while certain of Kraepelin's presenile psychoses may not appear until the sixth. Although probably always associated in some degree with a demential process, all senile psychoses are not necessarily senile dementias. The predominance in some cases of certain symptom complexes makes it advisable to differentiate where possible, certain clinical types of which the following are more common:

1. *Simple Deteriorating Type, or Senile Dementia.*
2. *Presbyophrenic Type.*

Presenting a symptom complex similar to Korsakow's psychosis.

3. *Confusional Type.*
4. *Depressive Type.*
5. *Paranoid Type.*
6. *Excited Type.*

Types 3 to 6 include the *socially* recoverable forms and do not necessarily lead to rapid dementia and from the practical standpoint, it is of advantage to separate these; the use of these differentiating terms will at least keep records from showing cases of senile dementia discharged as recovered. It is these types which more frequently are confused with arteriosclerotic processes.

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VII. Dementia Precox:

The type or form should be indicated whenever possible. Also avoid mixture, *e. g.*, hebephrenic and catatonic, one group of symptoms certainly predominates at least.

1. *Hebephrenic Form.*
2. *Catatonic Form.*
3. *Paranoid Form.*
4. *Simple Form.*

This term will include abortive, heboidoform, forme fruste, etc., these terms no longer being desirable.

VIII. Paranoia (Kraepelin).

IX. Manic-Depressive Psychosis:

The same general instruction regarding types applies here as under Dementia Precox.

1. *Manic Type.*
2. *Depressive Type.*
3. *Mixed Type.*
4. *Circular Type.*

This term to include and take the place of others expressing the same idea such as alternating, folie circulaire, cyclothymia, etc.

X. Involutional Melancholia.

XI. Depression:

Other than that of manic-depressive psychosis or other depressive states, *e. g.*, those occurring in senile psychosis, etc., or depressions not otherwise accounted for.

1. *Simple.*
2. *Psychogenic.*
3. *Hallucinatory.*

Causative factors such as given under I and II are not demonstrable. The onset is generally abrupt. Hallucinations from the onset (usually auditory) are prominent. There is no sensorial clouding. The affect is one of fear and anxiety.

XII. Psychoneurosis:

This term to include psychasthenic, neurasthenic and angst states (angstneurosis or angstpsychosis), compulsion neuroses, obsessions, phobias, etc.

XIII. Hysteria.

XIV. Psychosis Associated with Epilepsy:

Epilepsy is not invariably associated with the occurrence of abnormal mental symptoms and should not be made a mental diagnosis. Associated with epilepsy the more common clinically observed mental abnormalities may be grouped as follows:

1. *Deterioration.*
2. *Excitement* (with or without hallucinations).
3. *Delirium.*
4. *Twilight State* (Dämmerzustände, dream or dazed states).

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Such terms as psychic and emotional epilepsy should not be used. Also, the other epilepsies, such as hysteroid, senile, alcholic, arteriosclerotic, should be classed under the psychosis of which they are only an especial symptom.

XV. DEFECTIVE STATE:

Under this general heading are included a number of inborn defective conditions differing essentially in degree only, therefore merging one into the other in such a way that separation is often a matter of great uncertainty. However, along general lines some degree of differentiation is not only possible but also of practical value. Although these individuals from the medical standpoint are mentally abnormal, this does not therefore necessarily mean that they are insane in the legal sense. It is the various acutely manifested mentally abnormal episodes which grow from this defective soil that bring the individual within the purview of the law and make possible a medical certification and legal commitment as insane. The following are the more generally recognized types of defect:

1. *Constitutional Psychopathy:*

More or less ill-balanced individuals usually intellectually bright but with twists and perversions in their mental make-up, commonly referred to as psychopathic personalities, or as exhibiting a constitutional psychopathic state. We have here to especially recognize that we are dealing with persons whose mental organization appears asymmetrical because of excess or diminution of development in one or another direction.

2. *Constitutional Inferiority:*

In comparison with the above we have a more general and uniform deficit in mental endowment and a noticeable restriction of the intellectual capacity. Developing upon the soil of mental instability, perhaps more frequently in the constitutionally psychopathic than the constitutionally inferior, but also in the imbecile and the idiot, we have episodic excitements, depressions, stupors, paranoid states, hallucinatory attacks, etc., which are advisedly recognized as a

3. *Psychosis of Degeneracy:*

a. *Prison Psychosis:*

A psychotic state developing in a degenerative individual, which is to be looked upon merely as an abnormal mental reaction to an especial situation and its attendant environmental conditions.

4. *Imbecility and Idiocy:*

The transition is gradual from the constitutionally inferior to the imbecile and the idiot. The latter two include the coarser grades of defect which render the person dependent because of unfitness for any occupation excepting possibly the simplest kind of labor under direction.

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XVI. UNDIFFERENTIATED PSYCHOSIS:

This term to be employed where the amount of data obtained by customarily complete routine examination is still insufficient to permit of a classification under any of the above types. However, in many of these cases, it will be possible to make a symptomatological diagnosis, although such symptoms are not enough to clearly establish the disease entity of which they are a part. Thus while the psychosis cannot be further differentiated, we may yet recognize

1. *Dementia.*
2. *Excitement.*
3. *Depression.*
4. *Confusional State.*
5. *Paranoid State.*
6. *Stupor.*

XVII. UNCLASSIFIED PSYCHOSIS:

In many cases the information available is entirely inadequate and no definite conclusion can be reached. These cases comprise a class which, because of the incomplete records, are of little psychiatric value and may be disposed of under this heading.

XVIII. MISCELLANEOUS:

Those mental disturbances which for various reasons cannot conveniently be grouped under any of the types mentioned but which do not belong in the unclassified or undifferentiated groups, for example, post-operative mental disorders, etc., may be included here.

XIX. NOT INSANE:

This opinion refers only to the condition of the individual while in the hospital, and not what may have been the condition prior to admission. For instance, a person, who according to the records, obviously suffered from an attack of delirium tremens, but from which recovery had taken place at the time of admission to the hospital, should be classified as Not Insane. Mention of the mental disorder presumably existing prior to admission may be made for record purposes, but not as a definite diagnosis.

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THE BIOGRAPHY OF A PATIENT WITH PARANOID DEMENTIA PRÆCOX.*

By CHARLES W. BURR, M. D.,
Professor of Mental Diseases, University of Pennsylvania.

I have been somewhat puzzled as to what specific name to give to the insanity from which the patient, whose life history I am about to relate, suffered. I say suffered rather than suffers and speak of him as if dead because, though still living physically, though his heart beats, respiration continues, and his abdominal viscera do their work, though reflex and automatic life remains, his real life is completed: he is a mere dement, mentally dead. Nothing more can happen to him worth adding to his biography, nothing of interest to the psychiatrist or psychologist, save the date of his formal death. Not many years ago he would have been classified by many as a moral imbecile but moral imbecility does not run so quickly into complete dementia: indeed if my conception of it is correct, assuming for the time being that there really is such a thing, its very essence consists in the preservation of good or at least fair intellectual power throughout life with a total absence, or great perversion, of the moral sense, a moral color blindness. Absence and perversion are not the same thing: there are some abnormal people who have no moral sense, who have no conception of right and wrong; there are others who have but their point of view concerning moral questions is entirely unlike that of the normal man; things he regards as wrong they look on as right and sometimes they regard with horror actions that he thinks moral or at the worst trifling lapses. For example, many of the people who dwell all their lives on, or just over, the borderland of insanity adhere closely in their conduct to the tenets of their perverted ideas as to morality. Mr. Day, best known as the author of "Sanford and Merton," was an example of one of those persons who have what one might call an individualistic code of morals. Such people

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are not moral imbeciles, however, yet are recognized by all as being diseased, though in certain directions they may be mentally even brilliant. Many profound students of the subject deny the existence of moral imbecility, as defined above, and maintain that there is always mental, *i. e.* intellectual, defect whenever there is true moral deficiency. Some writers, especially those belonging to the newspaper school of psychologists, believe or rather say (their beliefs are probably as ill defined as their right to an opinion is slight) that most of the world's great conquerors and statesmen were moral imbeciles. According to them the founders of great empires and indeed pretty much everybody who has had success in life's battle lack moral sense. So far as my personal study of the matter goes I am convinced that there are a few habitually criminal and vicious persons who are without moral sense but who yet have fair reasoning power. In such persons total absence of the moral sense is more frequent than its perversion. They have no appreciation of right and wrong rather than a perverted view of what constitutes right and wrong. I have seen a few juvenile criminals of this type, boys who became offenders not from bad environment or vicious training but because they did not possess, nor could there be created in them by education, a sense of right and wrong and who yet could reason fairly well and easily learn school lessons; but in all of them there was defect in all the higher mental faculties. They all lacked the faculty of judgment.

Some would classify him as a true paranoiac but the course of the disease was too rapid. Using the system of classification most in vogue to-day, I have diagnosed the case as one of paranoid dementia præcox. Criticism is frequently made that dementia præcox is not a disease entity, that indeed it is not a real thing but a mere collection of different things, which most usually happen during adolescence. I am not sure that the criticism is not well founded, but putting to one side the rather academic question as to whether dementia præcox is verily a disease or not, it is certainly true that there are a not very small number of the insane who have a history very like that of this patient, namely, outbursts of causeless anger beginning in infancy, inability to learn obedience and self-control, extreme egotism, a total lack of the social instinct, mental precocity, sometimes a congenitally perverted sexual instinct, followed by delusions of persecution and grandeur

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and finally dementia coming on in adolescence and rapidly becoming complete. The condition arises without any external cause. It does not need for its development a bad environment and a good environment does not delay its beginning nor retard its course. It does not depend on vicious habits in the victim or stress of life; on the contrary its causes are congenital, if not inherited. The symptoms may begin to appear in infancy, with the first dawning of mental life, or nothing may be noticed till puberty or adolescence. Its analogue in physical disorders is idiopathic muscular atrophy. It seems as if there were a cerebral abiatrophy. The protoplasm of the healthy brain is prepared during intrauterine life to run a certain time and withstand a certain amount of stress without breaking; in the congenitally weak it is only fitted to run a shorter time even under conditions of the lightest stress and may then simply stop, leaving the patient to live indefinitely as a simple dement or imbecile without any preceding period of delusions or hallucinations, confusion or excitement, or it may run prevertedly, causing delusions, etc., for a longer or shorter time before ceasing to work, before dementia supervenes. Just as in the muscular disease atrophy comes on without discoverable external cause and without any muscular stress, so in the mental disease degeneration comes after a shorter or longer time without psychical stress and without external cause. For convenience we need a name for such patients and paranoid dementia præcox is as good as any. It is clinically convenient to separate it from true paranoia in which marked dementia comes on only after many years, even though it may be illogical to say that two things are different only because in the one the final state comes on sooner than in the other. Though I lay emphasis on dementia præcox being developmental I do not mean that all developmental insanity presents the clinical picture of paranoid dementia præcox. Far from it. I am, however, inclined to think that all developmental insanity is essentially one disease, that the different clinical types depend upon somewhat accidental things or else upon peculiarities in the makeup of the individual machine. Much depends upon the definition of the word disease.

All developmental insanity depends ultimately upon prenatal causes, either hereditary or arising during intrauterine life. Both are often difficult to discover. For example, the influence of

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heredity in this particular case is hard to determine. So far as known there have been no cases of insanity, epilepsy or marked hysteria in any of the immediate forebears or near kin. On the father's side the family is one of distinction and of considerable intellectual force. It has held a prominent position for several generations. The father is a man of distinction and has no sign of degeneration (I use the word in a biological, not a moral sense) save that he is a sufferer from migraine. He has a somewhat too rigid conscience but no one, save the very few who have studied the matter, will believe that any amount of rigidity of conscience can have an evil influence on the offspring. The mother, whose family also is and has been for several generations far above the intellectual average, is somewhat nervous. This is all I know but there is nothing more difficult in medicine than to get a correct family history. Families forget, children are very properly not told of family skeletons, and often apparently mild ailments and peculiarities in the ancestors are just as bad as more serious afflictions so far as the influence on the offspring is concerned. Peculiarities in the parents which have resulted in no evil to them may yet be signs of instability, which in the child appear in such degree as to produce marked degeneration. An inherited potentiality for good or evil may be intensified or decreased in passing from generation to generation.

I first saw the patient when he was sixteen years old. He had one brother four years, and a sister six years, younger. He was born at term and the labor was normal. In late infancy he began to have attacks of violent causeless anger. He never had any convulsions save that sometimes his anger became almost convulsive and he would throw himself to the ground, shriek, scream and become rigid but the movements were always willed and he never lost consciousness. He never showed, even when a little child, any affection for his mother and always repelled any show of affection on her part. He has always been emotionally indifferent toward his father and has never shown him any respect though he developed delusions of persecution concerning him only long after he began to have delusions about other people and only a short time before he was sent to a hospital for the insane. As a child, but not later, he had some affection for one grandmother and for an old family servant. In childhood he began to show hate

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and contempt for his mother and in boyhood to upbraid her and accuse her of injustice and often said she had failed in her duty to him. His letters to her were always full of demands, frequently contained threats, and never showed the slightest filial feeling. His brother he always hated. His sister he liked very much until his final and complete breakdown.

It was impossible to teach him obedience and self-control. On the other hand, he quite early in life showed a strong sense of the sinfulness of lying. In that regard his moral sense was strongly developed. For years he was truthful and scorned to lie. As a boy, though he had no respect for his father, as such, he did have excessive family pride and an even exaggerated opinion of the position his father held in the community in which he lived. He did well at school, so far as lessons were concerned, until his fifteenth year, but he never made any boy friends and as early as his tenth year began to complain that the boys persecuted him. On account of this he was sent from school to school. Though he hated his mother and cared nothing for his father he was very fond of his home as a place. At first I had a rather fanciful suspicion, the effect upon my subconscious mind of rather wide reading on the subject of atavism, that this was an animal instinct, such as cats and certain other animals are said to possess, and had nothing to do with his pathologic state, but, as later knowledge showed, his room, and it was it he cared for, not the home, was bound up with his "system": he regarded his room as a place of refuge from persecution.

When I first saw him his family did not realize that he was mentally diseased but thought he was simply a nervous, ill tempered boy and unjustly blamed themselves, thinking that a more severe, or at least different, upbringing might have changed the course of events. The self-accusation was entirely unjust. No training, no environment, no guidance would have influenced him or his career. His schoolmates realized that he was eccentric but his patent intellectual ability prevented them from recognizing insanity. It would be more accurate to say they felt he was unlike themselves, that something was the matter with him, and neither stopped to think nor cared whether he was insane or not. Healthy boys, being fundamentally animals and not sentimentalists, have an instinctive aversion for the mentally unsound and for the physically

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defective which is good for the individual and for the race, but the maudlin sentimentality of modern thought, or rather feeling, which seeks to inculcate the belief that the weak should inherit the earth and the strong have such pity for the weak as to love them and breed with them, tries by preaching to overcome instinct and when it succeeds, breeds degenerates.

The boy himself had, not long before I saw him, told his father that he masturbated and wanted medical aid to help him recover from the habit. It was largely for this he was put in my care. He talked frankly and sensibly to me about the matter and entered on treatment with enthusiasm. He felt the nastiness of the habit very keenly. His intellectual ability along certain lines was good, but he was precocious, mentally lop-sided. He was a curious combination of child and man. He talked, but not frankly, about the persecution he had been subjected to all his life. He said he had not been brought up right, he had never had a fair show, no one treated him right. He was quite bitter against his schoolmates, but gave no specific instance of their persecuting him. He had begun already to regard the most casual and trifling acts of people whom he met as being done to injure him and harmless gestures and words he interpreted as insults. It should be noted that long before any specific delusions developed he was suspicious and thought he was ill treated. He showed indifference for his father and contempt for his mother. He realized that he was "unlike other boys" but did not realize that his own conduct was in any way responsible for the fact that he was not popular with his schoolmates. He had a profound realization of his rights but no realization of a son's duty to a loving father and mother. He was extraordinarily truthful. He would never, at that time, have committed petty theft as so many normal boys, or boys who finally become normal, do during puberty, and did not use profane or obscene language. Many boys pass through a period in which they get pleasure in obscenity. In fact many, if not most, boys at puberty suffer from an attack, which is purely an episode, of emotional and moral unbalance of some kind; but this boy's condition was not a mere episode, it was a step in his development. He was not at this time morbidly religious, though later he had a period of nasty religiosity. He cared nothing for play and the outdoor sports that every healthy boy enjoys and needs. He was

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sluggish in all his movements and lacked the unconscious grace of motion of the healthy boy. He was completely egotistical and had absolutely no altruistic feeling. He had the self-consciousness not of shyness but of silly arrogance. He was plainly insane and needed institutional restraint but his parents, hoping against hope, forbade his being confined in an institution.

Several years before one testicle had become atrophied, following an attack of mumps. Its small size distressed him and later he had many hypochondriacal hallucinations concerning it and he connected his sexual habit with it both as a cause and an effect. He examined his genitalia many times daily and saw many changes in them which had no real existence. To him they varied in size, consistency and shape, and were the seat of many different paræsthesias. He saw, when making these examinations, with the mind's eye, not with the physical eye. The disciples of that philosophy which teaches that such mental abnormalities as this boy showed, as well as many other pathologic states, are due to precocious sexual thought and indulgence and still more to unconsciously repressed sexual desire, and which further teaches that confession is a good therapeutic measure, will be elated to learn that the boy (not at the first visit to me but months later) explained his hate for his mother on the ground that when he was an infant she had perverted him, giving a very explicit account of the matter. Alas for philosophy, the truth was that a short time before he had been reading some wildly fantastic medical articles on the matter, written for popular consumption, and adapted his case to those he read of. A rather superficial psychoanalysis was all that was required to prove the real origin of his delusions on the subject. He hated his mother and reading that there are many mothers who have indecent love for their children, and being still ingenuous enough to believe that what is printed must be true, he held his mother responsible for his own case. I need not say that he was carefully watched in infancy, and whatever sexual thoughts may have perverted the baby mind he, during that period, performed no sexual act. During childhood and until puberty sexuality, so far as a very thorough investigation revealed, played no part in his life.

I sent him to the woods with a young doctor and he led an out-of-door life. At first he improved symptomatically but soon

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refused to stay away any longer. His overbearing conduct and cruelty to his younger brother, based on causeless jealousy and envy, made it impossible for him to be kept at home and he was therefore sent to a boarding school. At first he was fairly happy and did well at his lessons. Soon, however, he began to have delusions of persecution about the other boys and ceased to be able to study his lessons well. Still his masters did not suspect insanity. He was sent with a nurse to an out-of-town rest house where at first he was fairly contented but soon his old persecutory delusions returned and he added to them the specific delusion that people were trying to poison him and that his male nurse wanted to do improper things to him. He became more and more hypochondriacal and believed that the natural lumps and ridges on his skull were evidence of disease, were the result of his habit, and were growing daily in size. His inion was quite large and he had picked up somewhere, in reading phrenology, the belief that this indicated perverted desire. No argument could shake his opinion. He also began to complain of pain in the ridges and of general headache. He ran away from the rest house and went to his father's office, begging him to save him (the boy) from his enemies. He came to see me and I allowed him to go home. While there he stayed in his room most of the time, but would occasionally go out for a long walk. He wore an ice cap continuously to relieve the headache, and gave himself up to writing about his "system." He began to smoke and even to drink a little but this was done in a spirit of bravado and from a desire to appear manly rather than because alcohol produced any pleasant effect. He was not one of the type of degenerates who become inebriates or dipsomaniacs. At first he ate with the family but soon would take food only in his room because he believed his relatives wanted to poison him. He finally would eat only boiled eggs, fearing all other food had been poisoned. He read very little though as a younger boy he had been very fond of books. Again he was sent away with a nurse but soon returned home.

The tragedy which had been running over all the years of his life now rapidly approached its climax. His egotism became absolute, delusions of persecution ruled his every act, his moral sense disappeared entirely. He was profoundly hypochondriacal. He would have nothing to do with anyone, was insolent and very

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quarrelsome. He ceased to read. He was convinced there was a conspiracy to injure, even to kill, him. He had no thought of anything save to be avenged on his enemies. One day he pulled out a revolver and threatened to kill a servant, saying he had heard enough of her slurring talk about him. He imagined that a sentence spoken by her almost in a whisper to another servant was an insulting reference to him. Probably the lowness of tone excited his suspicion. I was sent for, came, and he gave me a revolver. That afternoon another physician saw him with a view to signing the certificate of insanity. He became violent, drew another revolver, which no one dreamed he possessed, and fired, hitting the doctor in the head. Fortunately the bullet did not penetrate the skull. He was overpowered and removed to an asylum. He had no realization of the seriousness of his act, no knowledge of its wrongfulness. Every man, said he, had a right to protect himself against his enemies. He was then eighteen years old. Mental degeneration went on with great rapidity after his attempt to kill.

When I saw him last, some months ago, he was standing in his room in the asylum, statuesque, mute, arrogant. He would not speak and had not for hours. He was in catatonic stupor. When, hours later, the catatonia passed off he talked grandiloquently. He was the strongest and most beautiful man in the world. We were mere cattle not worth his notice. He did not reason. There was no systematization of his delusions. He was filthy in his habits, obscene in his talk. He has demented more and more since then.

Until a few months before the final crisis he wrote a great deal of characteristic paranoiac matter. He kept a diary in cipher for some months and also wrote an account of his "system." This consisted of an apology for his life, an account of an imaginary, but to him real, empire of which he was the head, and of advice to his parents about how to bring up his little sister, together with accusations against them about how badly they had treated him. The account covered many pages. Though each sentence was intelligible, the whole was incoherent. His letters to his mother were always dictatorial, arrogant and insulting. The early ones were perfectly coherent and showed only contempt but no marked evidence of insanity. Later they were incoherent. In one to his

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father he made threats that he would rob the house, run away with the money obtained and never let them know where he was. He threatened to kill if they tried to prevent him from doing as he pleased. His later letters had after his signature the curious symbolic marks and titles that paranoiacs are so fond of and while the earlier ones were neatly written the later ones were smeared, blotted, underscored and capitalized in the characteristic manner of the delusional lunatic.

One would need to be a master of language to so describe this case that the reader would have a clear mental picture of it and I have not attempted such a thing. I shall, however, freed from the trammels of a formal case history, speak of some of the things that most impressed me. I was much struck, during the first year I treated him, by the very evident struggle that was going on between health and disease. When I first saw him he had constantly a vague realization that he was in some way mentally ill and sometimes realized clearly that he was in danger of becoming insane. He knew that his point of view of life was different from that of other people and strove at times to assimilate himself to others. Once, for example, I watched him among a crowd of boys, he not seeing me, on the way to a football game. He was manifestly trying to make himself believe that he too was having "a jolly good time." He was trying to have class spirit and all the other things that make for healthy schoolboy life and are vastly more important than book learning. It was pitiable to see the poor boy trying to be a natural boy. There were short periods when his delusions were in abeyance. Delusions in many types of insanity become submerged, for a time, when the patient sees new people and new places and do not reappear until there has been time for them to be attached to the new people. In this patient, even under the ordinary conditions of his life and without change of scene, there were, for a few months, short periods of time when he realized, or seemed to realize, that his delusions were due to illness, were really delusions. Thus he once wrote a letter to me in which there were strong indications of a true self-knowledge. Though there were these seeming fluctuations in the intensity of his disease he did not have, as is very frequently the case in the other forms of dementia præcox, any true intermissions, any real lucid intervals. To use a figure of speech, there seemed to be a

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constant fight between darkness and light within him. To use another figure, which may not be altogether figurative, it seemed as if some antidote were intermittently striving to overcome a poison acting on the organ of thought and as if whenever the antidote acted a larger dose of poison were elaborated. As it is very possible that this type of insanity is caused by chronic poisoning due to congenital defect in some of the glandular structures of the body, this figure may really be an explanation and not mere rhetoric. All this, however, still remains unproven.

The case is of interest from a medico-legal point of view. At the time he wounded the physician anyone would have recognized his insanity but had he done the same thing months before, and had a prosecuting attorney wished to convict him, much evidence could have been obtained to prove his sanity. Thus he did well at school, he gave no evidence of delusions to his schoolmasters, several of whom indeed wrote letters in praise of his ability at the time he already had fully developed delusions of persecution, and his conduct outside his father's house was not such as to attract notice. Too often is it forgotten in considering the question of legal responsibility that the insane do many sane things and the sane not a few mad ones.

The sexual element occupied so large a place in his case after puberty that on superficial examination one might be led to believe that masturbation was the cause of his insanity. Really it was symptomatic and not causative. He was not one of those children in whom there is a precocious development of emotional sexual desire before physical maturity of the sexual organs. His insanity was manifest before there was any sexual feeling, and masturbation was the result of the general loss of inhibitory power, which was itself a symptom of his mental state.

The case is an excellent illustration of the fact that mental disorder precedes and is the cause of the development of delusions. The soil must be prepared before delusions can grow. Thus this boy was suspicious long before he had any definite delusion that particular people wanted to injure him. Then there was a long time in which he believed certain persons wished to do him harm before he developed the very specific delusion that they wished to poison him by doing certain specific things. In the popular opinion a man is insane because he has delusions; really he has delusions because he is insane.

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A NOTE ON THE PROGNOSTIC VALUE OF HALLUCINATIONS IN THE MANIC-DEPRESSIVE PSYCHOSES.*

By EDMUND M. PEASE, M. D.,

McLean Hospital, Waverley, Mass.

This statistical study was undertaken for the purpose of answering the following debated question: "Do Hallucinations have any effect on the recovery rate in the Manic-Depressive Psychoses?"

To answer this query with some degree of certainty, the case records of 800 manic-depressive admissions to this hospital were closely examined. All cases in which the diagnosis might be questioned were excluded. No case was included in the hallucinating group in which the genuineness of the reported hallucination was at all in doubt. If a case discharged as improved showed by later reports a definite recovery, or, discharged recovered, later showed only improvement, it was tabulated as corrected.

A comparison was first made of the total number of cases with reference to the presence or absence of hallucinations and the corresponding recovery rate as shown in the following table:

TABLE I.

In 800 cases	219	or 27.3% had hallucinations.
Of the 219 hallucinating cases	122	or 55.7% recovered.
Of the 581 non-hallucinating cases	298	or 53.4% recovered.

It was found that these 800 cases represent only 609 *persons*. The relative frequency of hallucinating persons, with their recovery rate, is shown in the following table:

TABLE II.

Of the 609 persons	182	or 29.9% had hallucinations.
Of the 182 hallucinating persons	99	or 54.3% recovered.
Of the 427 non-hallucinating persons	192	or 44.9% recovered.

*The writer wishes to acknowledge here his indebtedness to Dr. E. Stanley Abbot for his many valuable suggestions and constant advice in the preparation of this paper, and also to Dr. F. Lyman Wells for his helpful criticisms.

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To eliminate a possible increase in ratio of recoveries from attacks with hallucinations due to some patients having many attacks with hallucinations in each, the 516 persons who had only one admission were next considered, and the result shown in Table III.

TABLE III.

Of the 516 persons.....156 or 30.2% had hallucinations.
Of the 156 hallucinating persons..... 73 or 47.7% recovered.
Of the 360 non-hallucinating persons....145 or 40.2% recovered.

The remaining persons, or those having more than one admission, were then considered in relation to both personal tendency to hallucinate, and to recovery from their attacks. The results are shown in Table IV.

TABLE IV.

93 Persons admitted more than once.

	Persons admitted.		Admissions.		Recovered.		Admissions with hallucinations.		Recoveries in admissions with hallucinations.		Admissions without hallucinations.		Recoveries in admissions without hallucinations.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons who hallucinated in any admission.	38	40.8	143	50.3	104	72.7	65	45.4	48	73.8	78	54.6	56	71.8
Persons without hallucinations in any admission.....	55	59.2	141	49.7	96	68.1					141	49.7	96	68.1

An analysis of the admissions in Table IV shows the following distribution:

TABLE V.

1	person	with	35	admissions	
2	"	"	10	"	each
1	"	"	8	"	"
2	"	"	7	"	"
1	"	"	5	"	"
9	"	"	4	"	"
12	"	"	3	"	"
65	"	"	2	"	"

The above comparison shows the obvious exceptional status of the one person heading the list.

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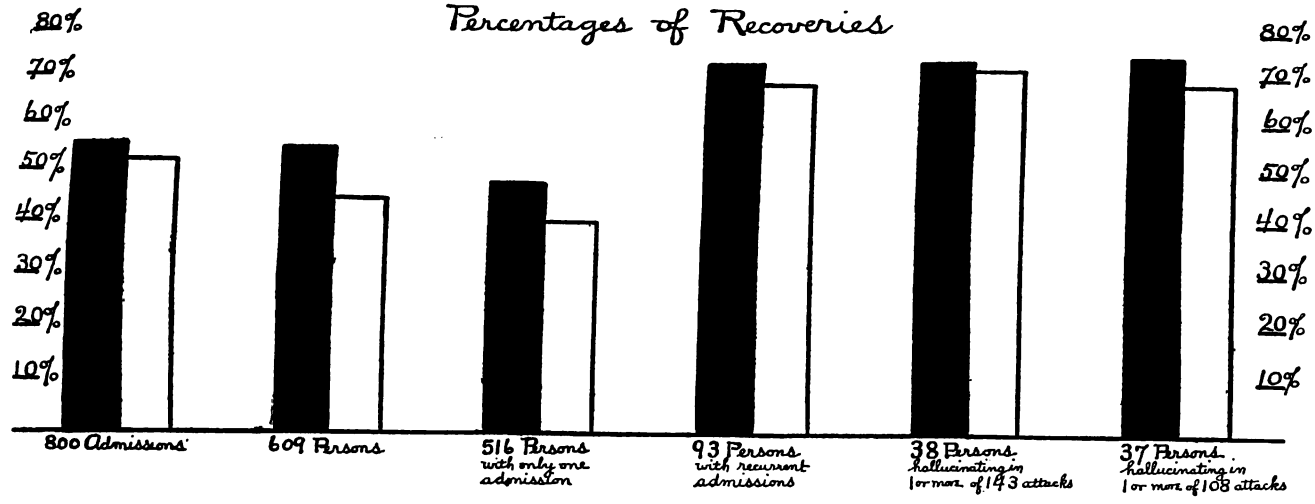

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It was thought that the elimination of this case would give a truer average than that shown in Table IV. The following table shows the figures thus reduced.

TABLE VI.

92 Persons admitted more than once after excluding the one exceptional case.

	Persons admitted.		Admissions.		Recovered.		Admissions with hallucinations.		Recoveries in admissions with hallucinations.		Admissions without hallucinations.		Recoveries without hallucinations.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons with hallucinations in any attack.	37	40.2	108	43.4	78	72.2	63	58.3	47	74.6	45	41.7	31	68.9
Persons without hallucinations in any attack.	55	59.8	141	56.6	96	68.1					141	56.6	96	68.1

It is interesting to note regarding this one case just eliminated, that his attacks (all manic) began at the age of twenty and were for the most part quite short in duration (3 weeks to 5 months) until the last eight and a half years of life, which were spent continuously at this hospital. During this latter period he had a number of oscillations in condition but did not completely recover, and finally died here. He was able, for thirty-odd years after his attacks began, to keep his position and do effective and satisfactory work in the periods between attacks.

A further consideration of the 93 persons with several admissions shows a small group of 11 persons who had hallucinations in all their 28 admissions.

These 11 persons furnished 20, or 71.4%, recoveries.

The percentages of recoveries in the foregoing tables are represented graphically in the following diagram. The shaded block indicates the percentage of hallucinating attacks or persons, the white block that of the non-hallucinating.

CONCLUSIONS.

1. A slightly larger percentage of *cases* with hallucinations recovered.

2. A slightly larger percentage of *persons* with hallucinations recovered.

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3. In persons admitted more than once, the proportion of hallucinating persons was somewhat larger than in those admitted only once, and the recoveries were proportionately more frequent in the hallucinating persons, and in their hallucinatory attacks.

4. So far as hallucinations have any prognostic value at all, they indicate (1) A slightly better prognosis for the attack, and (2) A somewhat greater liability to recurrence of attacks. But (3) the differences in percentage between the hallucinating and the non-hallucinating cases is so slight as to suggest that if data from a much larger number of cases could be obtained these differences might disappear; in which case hallucinations would have no prognostic value.

NOTE.—A study of such factors as kind of hallucination, age at attack, form and duration of attack, etc., is now in process of completion.

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ASSOCIATION IN FEEBLE-MINDED AND DELINQUENT CHILDREN.

By FREDERIC C. EASTMAN, M. D., and A. J. ROSANOFF, M. D.

It has been shown that association tests can serve as aids in the diagnosis of insanity.[1] About two years ago a standardized method for testing association was published together with association norms and specimens illustrating various pathological associational tendencies to be observed in insane subjects.[2] The same standardized method has been employed in the present study of association in feeble-minded and delinquent children.

§ 1. Description of Material.

The material of this study consists mainly of test records which have been obtained from two hundred and fifty-three subjects, as follows: One hundred and four boys from the House of Refuge, Randall's Island, New York; forty-two boys from the Brooklyn Disciplinary Training School; eight girls from the Brooklyn Training School and Home for Girls; forty-eight boys and forty-seven girls from some public schools in Brooklyn; and two boys and two girls who are private patients.

All subjects were selected on the basis of backwardness in studies as rated by the teachers; the majority are also delinquents, having been committed on charges of truancy, disobedience, running away from home, theft, burglary, assault, etc.

[1] G. Aschaffenburg: *Experimentelle Studien über Associationen.* Kraepelin's Psychologische Arbeiten, Vols. I, II, and IV. R. Sommer: *Diagnostik der Geisteskrankheiten.* C. G. Jung: *Diagnostische Assoziationsstudien.*

[2] G. H. Kent and A. J. Rosanoff: *A Study of Association in Insanity.* Amer. Journ. of Ins., July and Oct., 1910. It would be impossible to avoid frequent reference to this study without reprinting nearly one hundred pages of frequency tables, appendix, discussion of classification, etc. All quotations from this study and all references to it will be indicated by asterisks.

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In their ages two hundred and thirty-three of the subjects range from eleven to seventeen years, almost all the remaining twenty being one or two years below or above this range.

It should not be assumed that all these subjects are cases of arrested or retarded development. It may be admitted that difficulty of learning is the best available criterion of mental inferiority or defectiveness in a child; but we have no proof to show that in all our cases the backwardness in studies is due to actual difficulty of learning; on the contrary, such backwardness, as every teacher knows, is not infrequently to be ascribed rather to lack of interest, laziness, etc.

§ 2. Abnormal Associational Tendencies.

An examination of the test records reveals a number of peculiar tendencies by which our subjects as a group differ, on the one hand, from normal subjects, and on the other hand, from insane subjects. These tendencies will be briefly described.

1. *Failure of Reaction.*—General inability to coöperate in the test is met with often enough among insane subjects, and disinclination to coöperate is met with among both normal and insane subjects; yet a subject, normal or insane, who is able and willing to coöperate will seldom fail to give a reaction to any of the stimulus words used in the test. Of our two hundred and fifty-three subjects no less than one hundred and eleven failed to react to one or more of the stimulus words, and the total number of instances of failure of reaction was three hundred and eighty-two.

Failure of reaction is obviously due in the majority of instances to lack of familiarity with the stimulus word. Thus we find words representing abstract, complex, or somewhat uncommon concepts giving rise to failure of reaction much more frequently than other words, while most of the stimulus words on the list, being simple and in common daily use, have not given rise to failure of reaction in any instance. This is shown in Table I in which the three hundred and eighty-two instances of failure of reaction are classified by stimulus words.

It seems, then, that in failure of reaction we have a phenomenon fairly characteristic of arrest of development as distinguished

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from both normal mental states and states of acquired mental deterioration.

TABLE I.

justice.....74	command.....8	blossom.....4	river.....1
comfort.....67	bitter.....7	mountain.....3	trouble.....1
mutton.....53	joy.....6	rough.....3	eagle.....1
anger.....46	stem.....5	swift.....3	stomach.....1
citizen.....26	bible.....5	sickness.....2	bath.....1
memory.....15	health.....4	smooth.....2	square.....1
cottage.....15	sheep.....4	foot.....2	loud.....1
religion.....15	priest.....4	king.....2	thief.....1

2. *Non-specific Reactions.*—"In this group are placed words which are so widely applicable as to serve as more or less appropriate reactions to almost any of our stimulus words. That such reactions are, in value, inferior to the remaining group of common reactions, which we have termed, in contradistinction, *specific reactions*, is, perhaps, sufficiently obvious; we shall speak later, however, of their occurrence in both normal and insane cases.

"It is not always easy to judge whether or not a given reaction should be classed as non-specific. A study of our material made with special reference to this type of reactions has enabled us to select the following list of words, any of which, occurring in response to any stimulus word, is classed as a non-specific reaction:

article, articles
bad
beautiful, beauty
fine
good, goodness
great
happiness, happy
large
man
necessary, necessity
nice
object (noun)
people
person
pleasant, pleasantness, pleasing, pleasure
pretty
small
thinking, thought, thoughts
unnecessary, unpleasant
use, used, useful, usefulness, useless, uselessness, uses, using
woman
work

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"It should be mentioned that some of these words occur as reactions to one or several stimulus words with such frequency (*citizen—man,* value 27.8 per cent; *health—good,* value 9.4 per cent) as to acquire in such instances a value as high as that of strictly specific reactions" (*).

One thousand normal subjects gave, on an average, 6.2 per cent of non-specific reactions. Insane subjects gave non-specific reactions with approximately the same average frequency. Both normal and insane subjects present considerable individual variation so that in not a few cases we find from 10 to 15 per cent non-specific reactions; it is quite exceptional, however, to find more than that proportion. In our present material non-specific reactions have occurred with an average frequency of 8.4 per cent and no less than thirty-six subjects gave 15 per cent or more.

It would seem, then, that an unduly pronounced tendency to give non-specific reactions is another fairly characteristic manifestation of arrest of development.

3. *Repetition.*—4. *Particles.*—Contraction of the mental horizon, which is characterized by a tendency to repeat many times the same reaction, has been observed in certain states of deterioration, particularly general paresis and epileptic dementia (*). This tendency appears even more frequently in arrests of development. It is, however, not as a rule independent of other tendencies but is connected in some cases with the tendency of giving non-specific reactions and in others with that of giving particles of speech (articles, numerals, pronouns, auxiliary verbs, adverbs of time, place, or degree, conjunctions, prepositions, and interjections).

5. *Total Number of Individual Reactions.*—It has been shown elsewhere that "the one tendency which appears to be almost universal among normal persons is the tendency to give in response to any stimulus word one or another of a small group of common reactions." And it has also been shown that in insane subjects, considered *en masse,* this tendency is markedly weakened (*).

In the present group of subjects we find a similar, though less marked, weakening of this tendency with a resulting increase in the average number of doubtful and individual reactions, as will be seen from Table II.

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The individual reactions are made up partly of non-specific reactions, repetitions, particles of speech, partly of normal reactions, so classified in accordance with the appendix to the frequency tables (*). As is the case with the individual reactions of any group of subjects, a large proportion of them fall into the unclassified group. Among these may be distinguished "far fetched" reactions (*), "circumstantial" reactions (*), reactions due to distraction. Truly incoherent reactions are rather exceptional. Neologisms of the senseless type have not occurred in any case.

TABLE II.

	Common reactions.	Doubtful reactions.	Individual reactions.
1000 normal subjects	91.7%	1.5%	6.8%
247 insane subjects	70.7%	2.5%	26.8%
253 backward and delinquent children	84.6%	2.2%	13.2%

The several abnormal associational tendencies mentioned above are not shown by all subjects in any uniform manner. In some subjects one or another of these tendencies predominates while in others several of them are equally apparent. It must be further observed that a good many of our subjects gave normal records; some of these subjects, though for some reason rated as backward by their teachers, are, nevertheless, undoubtedly normal, as is shown by the official records of their school work, industrial work, and conduct; others are rated as backward solely by reason of their being in a class two or three years too low for their age, their work, however, being up to the average of the class; still others, also rated as backward by their teachers, are, perhaps, actually deficient in their studies, but our information concerning them is insufficient to establish this point or to establish the diagnosis of feeble-mindedness.

For a general statistical study of our material we have divided all the test records into four groups: Group I contains all the approximately normal records, that is to say, records with not more than nine individual reactions, not more than fourteen non-specific reactions, and no instances of failure of reaction. Group II contains all records with not less than fifteen non-specific reactions.

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Group III contains all records which are not included in Group II and which show more than fifteen individual reactions. Group IV contains all the remaining records, that is to say, those which show instances of failure of reaction, or from ten to fifteen individual reactions, but not over fourteen non-specific reactions.

In Table III are given the figures for the four groups together with some figures for certain groups of normal subjects, which have been introduced for comparison.

§ 3. Individual Test Records.

The following test records have been selected as presenting typical examples of the various associational tendencies which we have observed in our subjects. The numbers which appear after the reactions indicate in each case the reaction type in accordance with the classification as arranged in the order of preference (*) which is here reproduced for convenience in reference. 0 = failure of reaction. Common specific reactions are not numbered.

1. Non-specific (common).
2. Doubtful reactions.

Individual Reactions.

3. Sound reactions (neologisms).
4. Neologisms without sound relation.
5. Repetition of preceding reaction.
6. Reaction repeated five times.
7. Repetition of preceding stimulus.
8. Derivatives.
9. Non-specific reactions.
10. Sound reactions (words).
11. Word complements.
12. Particles of speech.
13. Association to preceding stimulus.
14. Association to preceding reaction (by frequency tables).
15. Repetition of previous reaction.
16. Repetition of previous stimulus.
17. Normal (by appendix).

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18. Association to preceding reaction (without frequency tables).

19. Unclassified.

TABLE III.

Types of reaction.	186 normal subjects.[1] Selected records containing not over ten individual reactions.	Backward and delinquent children.			
		Group I. 39 subjects	Group II. 36 subjects.	Group III. 101 subjects.	Group IV. 77 subjects.
Common reactions:					
Specific reactions...	89.7%	87.4%	64.5%	78.1%	67.9%
Non-spec. reactions.	4.9%	5.4%	18.4%	7.4%	6.6%
Doubtful reactions...	0.9%	1.4%	2.2%	2.2%	2.7%
Individual reactions:					
Normal reactions[2]..	1.8%	1.7%	2.4%	2.8%	4.1%
Other types.....	2.7%	4.1%	11.5%	7.8%	16.0%

[1] 86 adults, common school education; 66 adults, collegiate education; and 46 school children. (*)

[2] So classed in accordance with the appendix to the frequency tables. (*)

CASE 180A.—J. S. Male. Age 14 years. Pupil in public school. Backward in his studies. Failure of reaction.

Table—eat	Needle—sew	Ocean—sea .....
Dark—black	Red—flower	Head—horse 19
Music—phonograph 17	Sleep—pillow-case 17	Stove—burn .....
Sickness—doctor	Anger—mad	Long—man 1
Man—work 1	Carpet—floor	Religion—Protestant ....
Deep—hole	Girl—woman 1	Whiskey—drink .....
Soft—cake	High—hill	Child—baby .....
Eating—fish	Working—shop	Bitter—whiskey 16
Mountain—hill	Sour—sweet	Hammer—nail .....
House—live	Earth—round	Thirsty—drink .....
Black—ink	Trouble—man 1	City—country .....
Mutton—.... 0	Soldier—man 1	Square—measure .....
Comfort—.... 0	Cabbage—eat	Butter—bread .....
Hand—finger	Hard—wood	Doctor—sick .....
Short—pencil	Eagle—bird	Loud—talk .....
Fruit—eat	Stomach—belly	Thief—steal .....
Butterfly—fly	Stem—tree	Lion—animal .....
Smooth—soft	Lamp—burn	Joy—happy 1
Command—work 1	Dream—night	Bed—sleep .....
Chair—sit	Yellow—flower	Heavy—hammer .....
Sweet—eat	Bread—eat	Tobacco—smoke .....
Whistle—talk	Justice—.... 0	Baby—child .....
Woman—cook 17	Boy—man 1	Moon—sky .....
Cold—burn 19	Light—sky	Scissors—cut .....
Slow—walk	Health—sick	Quiet—still .....
Wish—birthday 19	Bible—write 19	Green—grass .....
River—boat	Memory—.... 0	Salt—butter .....
White—cloth	Sheep—animal	Street—walk .....
Beautiful—flower	Bath—clean	King—president .....
Window—glass	Cottage—houi	Cheese—eat .....
Rough—wood	Swift—train	Blossom—plume 19
Citizen—.... 0	Blue—color	Afraid—scared .....
Foot—walk	Hungry—eat	
Spider—web	Priest—minister	

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CASE 202.—A. S. Male. Age 14 years. Inmate of House of Refuge. Disobeyed parents, ran away from home. Sixth grade, primary. Record in studies: fair and poor; in industrial work: fair and good; in conduct: excellent and good. Failure of reaction, particles of speech, repetition.

Table—eat	Needle—sew	Ocean—water
Dark—house	Red—flower	Head—hair
Music—play	Sleep—man 6	Stove—fire
Sickness—he 12	Anger— 0	Long—stick
Man—a 12	Carpet—floor	Religion— 0
Deep—buried 17	Girl—dresses	Whiskey—brandy
Soft—apple	High—jump	Child—baby
Eating—bread	Working—man 1	Bitter—lemon
Mountain—high	Sour—lemon	Hammer—axe
House—high	Earth—dirt	Thirsty—water
Black—clouds	Trouble—man 1	City—state
Mutton— 0	Soldier—drills 2	Square—corner
Comfort— 0	Cabbage—eat	Butter—bread
Hand—man 1	Hard—floor	Doctor—medicine
Short—leg	Eagle—fly	Loud—holler
Fruit—eat	Stomach—eat	Thief—rob
Butterfly—flies	Stem—flower	Lion—tiger
Smooth—board	Lamp—burn	Joy—happy 1
Command—stand 10	Dream—sleep	Bed—sleep
Chair—sit	Yellow—flowers	Heavy—hammer
Sweet—apple	Bread—white	Tobacco—smoke
Whistle—I 12	Justice— 0	Baby—cries
Woman—sweeps 17	boy—runs	Moon—shines
Cold—to-day 12	Light—house 11	Scissors—cut
Slow—work 1	Health—air	Quiet—good 1
Wish—home	Bible—book	Green—beans 10
River—water	Memory—say 19	Salt—water
White—clouds	Sheep—meadow 2	Street—gutter
Beautiful—flowers	Bath—Saturday 19	King—queen
Window—white 14	Cottage—house	Cheese—butter
Rough—window 7	Swift—run	Blossom—leaves
Citizen—man 1	Blue—sky	Afraid—horse
Foot—man 1	Hungry—bread	
Spider—web	Priest—father	

CASE 36A.—J. C. Male. Age 13 years. Inmate of House of Refuge. Eighth grade, grammar. Record in studies: good, fair, bad; in industrial work: excellent, bad; in conduct: excellent, good, bad. Failure of reaction, non-specific reactions.

Table—red 19	Needle—thread	Ocean—big
Dark—night	Red—table 19	Head—big
Music—play	Sleep—lady	Stove—hot
Sickness—woman 9	Anger— 0	Long—stick
Man—street	Carpet—nice 1	Religion—men
Deep—river	Girl—nice 1	Whiskey—drink
Soft—cushion	High—roof	Child—little
Eating—table	Working—man 1	Bitter—apple
Mountain—woods	Sour—apple	Hammer—heavy
House—white	Earth—big	Thirsty—child
Black—cat	Trouble—men 2	City—great 1
Mutton— 0	Solider—marching	Square—paper
Comfort— 0	Cabbage—green	Butter—yellow
Hand—black	Hard—boy 15	Doctor—writing 19
Short—stick	Eagle—black	Loud—hollering 2
Fruit—apple	Stomach—clean 15	Thief—gold
Butterfly—yellow	Stem—root	Lion—eats
Smooth—board	Lamp—light	Joy—man 1
Command—soldier	Dream—man 1	Bed—sleeping
Chair—nice 9	Yellow—flower	Heavy—hammer
Sweet—apple	Bread—brown	Tobacco—smoking
Whistle—good 1	Justice— 0	Baby—little
Woman—street	Boy—black 15	Moon—shine
Cold—weather	Light—lamp	Scissors—cut
Slow—boy	Health—me 1	Quiet—still
Wish—dollar 2	Bible—read	Green—book
River—deep	Memory— 0	Salt—sour
White—cat	Sheep—pa k 19	Street—large 1
Beautiful—flower	Bath—bo	King—rich
Window—nice 9	Cottage— ed 15	Cheese—white
Rough—dog	Swift—k k 17	Blossom—red
Citizen—good 1	Blue—pe 19	Afraid—robber 2
Foot—clean 19	Hungry—man 1	
Spider—web	Priest—bay	

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CASE 130A.—J. D. Female. Age 15 years. Pupil in public school. Backward in her studies. Non-specific reactions.

Table—eat	Needle—sharp	Ocean—large 1
Dark—night	Red—dress	Head—small 1
Music—sound	Sleep—night	Stove—iron
Sickness—unwell	Anger—mad	Long—cord 17
Man—male	Carpet—heavy	Religion—good 1
Deep—far	Girl—good 1	Whiskey—good 1
Soft—sponge	High—house	Child—smart 17
Eating—lunch	Working—hard	Bitter—medicine
Mountain—high	Sour—apple	Hammer—utensil
House—live	Earth—good 6	Thirsty—dog
Black—dark	Trouble—sickness	City—large 1
Mutton—eat	Soldier—brave	Square—table
Comfort—ease	Cabbage—vegetable	Butter—soft
Hand—white	Hard—rock	Doctor—good 1
Short—small 1	Eagle—bird	Loud—whistle
Fruit—eat	Stomach—big 19	Thief—man 1
Butterfly—beautiful 1	Stem—short	Lion—fierce
Smooth—velvet	Lamp—gas	Joy—Christmas
Command—obey	Dream—bad 1	Bed—large 1
Chair—wood	Yellow—dress	Heavy—iron
Sweet—candy	Bread—supper 17	Tobacco—good 1
Whistle—noise	Justice—right	Baby—boy
Woman—tall	Boy—tall	Moon—yellow
Cold—day	Light—good 1	Scissors—useful 1
Slow—boy	Health—fine 1	Quiet—girl
Wish—good 1	Bible—large 1	Green—paint
River—swift	Memory—good 1	Salt—useful 1
White—chalk	Sheep—animal	Street—long
Beautiful—color	Bath—fine 1	King—Edward
Window—large 1	Cottage—small 1	Cheese—good 1
Rough—storm	Swift—boy 17	Blossom—peach
Citizen—man 1	Blue—ribbon	Afraid—burglar
Foot—small 1	Hungry—girl	
Spider—insect	Priest—quiet 19	

CASE 131A.—J. G. Female. Age 19 years. Pupil in public school. Backward in her studies. Non-specific reactions.

Table—brown	Needle—sew	Ocean—sea
Dark—black	Red—color	Head—large 1
Music—grand 19	Sleep—think 2	Stove—fine 1
Sickness—illness	Anger—mad	Long—head
Man—large 1	Carpet—color	Religion—church
Deep—sorrow	Girl—good 1	Whiskey—drink
Soft—smooth	High—man 1	Child—girl
Eating—food	Working—boy	Bitter—eat 6
Mountain—large 1	Sour—apple	Hammer—use 1
House—burn 19	Earth—surface	Thirsty—drink
Black—dark	Trouble—lot 2	City—country
Mutton—cow	Soldier—man 1	Square—cube
Comfort—home	Cabbage—vegetable	Butter—eat
Hand—large 1	Hard—apple	Doctor—examine 17
Short—small 1	Eagle—bird	Loud—talk
Fruit—food	Stomach—man 1	Thief—man 1
Butterfly—bird	Stem—leaf	Lion—animal
Smooth—soft	Lamp—globe	Joy—think 9
Command—obey	Dream—sleep	Bed—sleep
Chair—use 1	Yellow—color	Heavy—watch 19
Sweet—eat	Bread—eat	Tobacco—chew
Whistle—use 9	Justice—man 1	Baby—small 1
Woman—large 1	Boy—man 1	Moon—large 1
Cold—dog 19	Light—dark	Scissors—cut
Slow—quick	Health—good 1	Quiet—silent
Wish—thought 1	Bible—book	Green—color
River—beautiful 1	Memory—think 1	Salt—white
White—cloth	Sheep—animal	Street—number
Beautiful—thing 2	Bath—dog 18	King—man 1
Window—glass	Cottage—home	Cheese—eat
Rough—wood	Swift—hard	Blossom—flower
Citizen—man 1	Blue—color	Afraid—girl
Foot—animal	Hungry—eat	
Spider—animal	Priest—church	

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CASE 59A.—D. W. Male. Age 14 years. Inmate of House of Refuge. Larceny. Seventh grade, grammar. Record in studies: good, fair; in industrial work: good; in conduct: good, bad. Non-specific reactions.

Table—eat		Needle—sew		Ocean—water	
Dark—light		Red—color		Head—hair	
Music—play		Sleep—bed		Stove—fire	
Sickness—disease		Anger—good	1	Long—big	
Man—person	1	Carpet—walk		Religion—must	19
Deep—low		Girl—person	1	Whiskey—not	2
Soft—thing	19	High—very	12	Child—man	1
Eating—mouth		Working—like	19	Bitter—sour	
Mountain—high		Sour—not	2	Hammer—chop	19
House—live		Earth—flower		Thirsty—drink	
Black—color		Trouble—much		City—houses	
Mutton—meat		Soldier—good	1	Square—thing	15
Comfort—pleasure	1	Cabbage—vegetable		Butter—eat	
Hand—work	1	Hard—bad	1	Doctor—help	
Short—long		Eagle—bird		Loud—holler	
Fruit—good	1	Stomach—hard	15	Thief—bad	1
Butterfly—insect		Stem—fruit		Lion—big	
Smooth—nice	1	Lamp—light		Joy—good	1
Command—talking	2	Dream—sleep		Bed—sleep	
Chair—sit		Yellow—color		Heavy—good	6
Sweet—good	1	Bread—eat		Tobacco—smoke	
Whistle—mouth		Justice—ruler		Baby—small	1
Woman—person	1	Boy—person	1	Moon—shine	
Cold—sickness		Light—lamp		Scissors—cut	
Slow—bad	1	Health—good	1	Quiet—still	
Wish—get		Bible—prayers		Green—color	
River—water		Memory—good	1	Salt—sour	
White—color		Sheep—wolf		Street—big	15
Beautiful—nice	1	Bath—good	1	King—ruler	
Window—see		Cottage—live		Cheese—eat	
Rough—hard		Swift—run		Blossom—flower	
Citizen—man	1	Blue—color		Afraid—bad	1
Foot—walk		Hungry—eat			
Spider—insect		Priest—prayers			

CASE 203.—J. P. Male. Age 15 years. Inmate of House of Refuge. Backward in his studies. Failure of reaction, non-specific reactions, particles of speech, repetition. Twenty-seven individual reactions.

Table—eat		Needle—sew		Ocean—big	
Dark—evening		Red—apple		Head—I	6
Music—playing		Sleep—I	6	Stove—good	1
Sickness—boy	17	Anger—	0	Long—to-day	12
Man—see	19	Carpet—floor		Religion—Catholic	
Deep—hole		Girl—see	15	Whiskey—bad	1
Soft—banana	17	High—I	6	Child—small	1
Eating—dinner		Working—I	5	Bitter—	0
Mountain—high		Sour—pickles		Hammer—nails	
House—see		Earth—ground		Thirsty—I	6
Black—shoes		Trouble—no		City—large	1
Mutton—	0	Soldier—I	6	Square—black	
Comfort—	0	Cabbage—eat		Butter—soft	
Hand—two		Hard—rock		Doctor—good	1
Short—I	6	Eagle—bird		Loud—sing	
Fruit—eat		Stomach—I	6	Thief—arrested	2
Butterfly—flying		Stem—apple		Lion—wild	
Smooth—paper		Lamp—light		Joy—	0
Command—captain		Dream—night		Bed—I	6
Chair—sit		Yellow—banana		Heavy—hammer	
Sweet—candy		Bread—eat		Tobacco—smoke	
Whistle—I	6	Justice—	0	Baby—small	1
Woman—standing	19	Boy—there	12	Moon—light	
Cold—to-day	12	Light—air		Scissors—cut	
Slow—obey		Health—I	6	Quiet—room	
Wish—luck		Bible—read		Green—flag	
River—boats		Memory—gem	19	Salt—good	1
White—air	19	Sheep—good	1	Street—large	1
Beautiful—picture		Bath—I	6	King—country	
Window—pane		Cottage—work	9	Cheese—good	1
Rough—dirt		Swift—whip	10	Blossom—flower	
Citizen—man	1	Blue—sky		Afraid—I	6
Foot—two		Hungry—I			
Spider—bites	2	Priest—preacher			

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CASE 239.—P. J. Male. Age 11 years. Inmate of Brooklyn Disciplinary Training School. Disorderly conduct. Third grade, primary. General record for studies, industrial work, and conduct: bad, satisfactory. Failure of reaction, non-specific reactions, repetition, particles of speech. Twenty-eight individual reactions.

Table—eat	Needle—sew	Ocean—sea.....
Dark—night	Red—color	Head—brains .....
Music—sing	Sleep—night	Stove—hot .....
Sickness—die 2	Anger—..... 0	Long—day .....
Man—father	Carpet—stand 19	Religion—church .....
Deep—down	Girl—think 9	Whiskey—drink .....
Soft—place 19	High—up	Child—thinking 1
Eating—food	Working—hard	Bitter—very 6
Mountain—high	Sour—eat 6	Hammer—nail .....
House—inside 12	Earth—cool 19	Thirsty—very .....
Black—cellar 13	Trouble—prison 19	City—nice 6
Mutton—eat	Soldier—killing 17	Square—big .....
Comfort—self	Cabbage—eat	Butter—nice 6
Hand—work 1	Hard—eat 5	Doctor—pretty 9
Short—something 19	Eagle—flies	Loud—noise .....
Fruit—eat	Stomach—eat	Thief—robber .....
Butterfly—see 19	Stem—flower	Lion—kills 15
Smooth—ground	Lamp—light	Joy—.... 0
Command—give	Dream—things	Bed—sleep .....
Chair—sit	Yellow—flower	Heavy—very .....
Sweet—taste	Bread—sweet 11	Tobacco—chew .....
Whistle—blow	Justice—.... 0	Baby—nice 1
Woman—see 15	Boy—nice 1	Moon—pretty 9
Cold—it's.....12	Light—pretty 9	Scissors—cut .....
Slow—very 6	Health—good 1	Quiet—person 1
Wish—something	Bible—read	Green—flower .....
River—bathing 17	Memory—flower 15	Salt—food .....
White—hair	Sheep—grass	Street—pretty 1
Beautiful—flower	Bath—take	King—nice 6
Window—clean	Cottage—nice 1	Cheese—good 1
Rough—play	Swift—ball	Blossom—nice 1
Citizen—..... 0	Blue—sky	Afraid—dark .....
Foot—bad 9	Hungry—very	
Spider—poison	Priest—nice 6	

CASE 144A.—F. L. Female. Age 12 years. Pupil in public school. Backward in her studies. Repetition. Thirty individual reactions.

Table—kitchen	Needle—machine 17	Ocean—church 5
Dark—house	Red—dress	Head—girl .....
Music—park 19	Sleep—bed	Stove—girl 5
Sickness—hospital	Anger—school 6	Long—boy 14
Man—street	Carpet—dining-room 17	Religion—church .....
Deep—river	Girl—school	Whiskey—liquor .....
Soft—pillow	High—parlor 19	Child—girl .....
Eating—table	Working—factory	Bitter—pickles .....
Mountain—country	Sour—pickles	Hammer—nails .....
House—street	Earth—mountain	Thirsty—water .....
Black—dress	Trouble—home	City—country .....
Mutton—butcher	Soldier—army	Square—room .....
Comfort—bed	Cabbage—vegetable	Butter—bread .....
Hand—child	Hard—meadow 15	Doctor—hospital .....
Short—sentence 17	Eagle—park 15	Loud—teacher 15
Fruit—store	Stomach—girl 6	Thief—room 15
Butterfly—meadow 2	Stem—leaf	Lion—park .....
Smooth—school 6	Lamp—parlor 15	Joy—Christmas .....
Command—school	Dream—sleep	Bed—room .....
Chair—kitchen	Yellow—butterfly	Heavy—weight .....
Sweet—fruit 15	Bread—delicatessen 17	Tobacco—match 19
Whistle—factory	Justice—teacher 15	Baby—home .....
Woman—teacher	Boy—street	Moon—sky .....
Cold—cough	Light—hospital 15	Scissors—dress .....
Slow—school	Health—hospital 5	Quiet—mountain 2
Wish—doctor 6	Bible—church	Green—grass .....
River—mountain 19	Memory—girl 6	Salt—delicatessen 15
White—dress	Sheep—meadow 2	Street—park 15
Beautiful—summer	Bath—room	King—throne .....
Window—school 19	Cottage—country	Cheese—delicatessen ....
Rough—boys	Swift—teacher 15	Blossom—summer .....
Citizen—America	Blue—dress	Afraid—room 15
Foot—child	Hungry—appetite	
Spider—web 17	Priest—church	

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CASE 186A.—F. G. Male. Age 17 years. Private patient. Feeble-minded. Failure of reaction, repetition, particles of speech. Thirty individual reactions.

Table—eat	Needle—stocking 19	Ocean—boat .....
Dark—rain 19	Red—fire	Head—turn 19
Music—playing	Sleep—wake	Stove—open 15
Sickness—vomiting 17	Anger—mad	Long—slow .....
Man—walks 2	Carpet—creep 15	Religion—talk 15
Deep—hole	Girl—run 2	Whiskey—drink .....
Soft—velvet	High—jump	Child—run 6
Eating—bread	Working—hard	Bitter—taste .....
Mountain—top	Sour—taste	Hammer—get 19
House—table	Earth—ground	Thirsty—drink .....
Black—coat	Trouble—naughty 19	City—go 15
Mutton—meat	Soldier—walk 15	Square—corner .....
Comfort—.... 0	Cabbage—eat	Butter—eat .....
Hand—catch 17	Hard—heavy	Doctor—Smith 17
Short—quick	Eagle—fly	Loud—talk .....
Fruit—eat	Stomach—pain	Thief—run .....
Butterfly—catch 15	Stem—leaf	Lion—run 5
Smooth—velvet	Lamp—light	Joy—play 17
Command—do	Dream—think 1	Bed—go .....
Chair—sit	Yellow—stone 11	Heavy—iron .....
Sweet—eat	Bread—eat	Tobacco—smoke .....
Whistle—blow	Justice—.... 0	Baby—sleep .....
Woman—walk 2	Boy—run 2	Moon—out 12
Cold—cough	Light—feather	Scissors—get 15
Slow—walk	Health—look 13	Quiet—slow .....
Wish—go	Bible—read	Green—grass .....
River—water	Memory—talk 19	Salt—get 15
White—pillow 17	Sheep—run	Street—run 6
Beautiful—pillow 5	Bath—swim	King—talk 15
Window—open	Cottage—door	Cheese—eat .....
Rough—run 10	Swift—run	Blossom—out 12
Citizen—.... 0	Blue—flag	Afraid—get 15
Foot—run	Hungry—eat	
Spider—creep	Priest—preach	

CASE 205.—D. G. Male. Age 17 years. Inmate of House of Refuge. Burglary. Third grade, primary. Record in studies: good; in industrial work: excellent; in conduct: excellent. Failure of reaction, repetition. Thirty individual reactions. (This subject is foreign born; although he can carry on an ordinary conversation without difficulty yet it is possible that some of the peculiarities in his test record may be due to imperfect command of English.)

Table—eat	Needle—sew	Ocean—river .....
Dark—gas 17	Red—necktie 15	Head—clean 6
Music—play	Sleep—bed	Stove—cook .....
Sickness—bed	Anger—.... 0	Long—stick .....
Man—works	Carpet—clean	Religion—.... 0
Deep—hole	Girl—nice 1	Whiskey—drink .....
Soft—hand	High—girl 7	Child—small 1
Eating—good 1	Working—money	Bitter—burning 19
Mountain—high	Sour—things 15	Hammer—nails .....
House—clean	Earth—clean 6	Thirsty—drink .....
Black—cat	Trouble—good 9	City—United States 17
Mutton—.... 0	Soldier—fight	Square—.... 0
Comfort—.... 0	Cabbage—eat	Butter—bread .....
Hand—clean	Hard—apples	Doctor—sick .....
Short—thing 19	Eagle—clean 6	Loud—boy .....
Fruit—clean 6	Stomach—clean 5	Thief—robber .....
Butterfly—good 1	Stem—.... 0	Lion—murderer 13
Smooth—things 19	Lamp—light	Joy—.... 0
Command—.... 0	Dream—sleep	Bed—sleep .....
Chair—clean 6	Yellow—necktie 15	Heavy—carry .....
Sweet—things 15	Bread—clean 6	Tobacco—chew .....
Whistle—blow	Justice—.... 0	Baby—small 1
Woman—kind	Boy—clean 6	Moon—sky .....
Cold—day	Light—see	Scissors—cut .....
Slow—lady 17	Health—good 1	Quiet—keep.....19
Wish—apples 19	Bible—read	Green—color .....
River—swim.....	Memory—.... 0	Salt—take 15
White—face	Sheep—..... 0	Street—clean .....
Beautiful—necktie 17	Bath—take	King—captain 17
Window—clean	Cottage—clean 6	Cheese—eat .....
Rough—house	Swift—.... 0	Blossom—flower .....
Citizen—.... 0	Blue—apple 15	Afraid—frightened .....
Foot—clean 6	Hungry—eat	
Spider—clean 5	Priest—church	

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CASE IIA.—G. G. Male. Age 16 years. Inmate of House of Refuge. In lowest class in institution. Dull and stupid. Has deaf and dumb brother. Failure of reaction, non-specific reactions, particles of speech, repetition. Thirty-seven individual reactions.

Table—small 6
Dark—ferry 19
Music—instrument .....
Sickness—headache .....
Man—little 19
Deep—beart 19
Soft—boy 6
Eating—breakfast .....
Mountain—high .....
House—small 1
Black—dog .....
Mutton—cow .....
Comfort—..... 0
Hand—cut 19
Short—arm .....
Fruit—banana .....
Butterfly—black .....
Smooth—paper .....
Command—give .....
Chair—sit .....
Sweet—food .....
Whistle—I 12
Woman—small 1
Cold—warm .....
Slow—work 1
Wish—home .....
River—smooth .....
White—dog 15
Beautiful—bird 19
Window—small 1
Rough—horse 19
Citizen—civil 2
Foot—small 1
Spider—web .....

Needle—small 1
Red—boy 6
Sleep—boy 5
Anger—cranky .....
Carpet—small 1
Girl—small 1
High—boy 6
Working—bed 19
Sour—apple .....
Earth—smooth .....
Trouble—eyes 19
Soldier—I 12
Cabbage—had 1
Hard—I 12
Eagle—bird .....
Stomach—pain .....
Stem—small 1
Lamp—big 6
Dream—good 1
Yellow—handkerchief ...19
Bread—dinner .....
Justice—sentence 17
Boy—small 1
Light—school 13
Health—well .....
Bible—Sunday .....
Memory—gems 19
Sheep—big 6
Bath—Saturday 19
Cottage—work 9
Swift—horse .....
Blue—tie .....
Hungry—now .....
Priest—good 1

Ocean—pretty 1
Head—big .....
Stove—small 1
Long—arm .....
Religion—Protestant ....
Whiskey—wine .....
Child—big 6
Bitter—taste .....
Hammer—big 6
Thirsty—water .....
City—light 19
Square—boy 6
Butter—dinner .....
Doctor—now 12
Loud—talk .....
Thief—I 12
Lion—big .....
Joy—happy 1
Bed—sleep .....
Heavy—boy .....
Tobacco—Long Tom 17
Baby—small 1
Moon—pretty 9
Scissors—big 6
Quiet—boy .....
Green—dollar 17
Salt—water .....
Street—light .....
King—big 6
Cheese—Thursday 19
Blossom—flower .....
Afraid—bad 1

CASE 105A.—E. M. Male. Age 15 years. Inmate of House of Refuge. Burglary. First grade, grammar. Rated by teacher as backward; actual record, however, shows: in studies: excellent, poor, bad; in industrial work: fair, good, excellent; in conduct: excellent, bad. Test record normal.

Table—eat .....
Dark—black .....
Music—instrument .....
Sickness—wealth .....
Man—woman 1
Deep—high .....
Soft—hard .....
Eating—drinking .....
Mountain—hill .....
House—foundation .....
Black—white .....
Mutton—eating .....
Comfort—peace .....
Hand—arm .....
Short—long .....
Fruit—vegetables .....
Butterfly—insect .....
Smooth—rough .....
Command—attention ....
Chair—table .....
Sweet—sour .....
Whistle—horn .....
Woman—man 1
Cold—warm .....
Slow—quick .....
Wish—something .....
River—water .....
White—black .....
Beautiful—fine 1
Window—glass .....
Rough—soft .....
Citizen—man 1
Foot—toe .....
Spider—insect .....

9

Needle—pin .....
Red—white .....
Sleep—awake .....
Anger—mad .....
Carpet—floor .....
Girl—boy .....
High—house .....
Working—slow .....
Sour—sweet .....
Earth—round .....
Trouble—useful 9
Soldier—army .....
Cabbage—fruit .....
Hard—soft .....
Eagle—bird .....
Stomach—insides 2
Stem—root .....
Lamp—oil .....
Dream—sleep .....
Yellow—white .....
Bread—eating .....
Justice—truth .....
Boy—girl .....
Light—dark .....
Health—wealth .....
Bible—history .....
Memory—sense .....
Sheep—flock .....
Bath—washing .....
Cottage—house .....
Swift—quick .....
Blue—yellow .....
Hungry—starved .....
Priest—minister .....

Ocean—water .....
Head—memory .....
Stove—heat .....
Long—shout .....
Religion—Catholic .....
Whiskey—drunk .....
Child—baby .....
Bitter—salt .....
Hammer—nails .....
Thirsty—drink .....
City—state .....
Square—round .....
Butter—soft .....
Doctor—examine 17
Loud—shout .....
Thief—liar .....
Lion—animal .....
Joy—pleasure 1
Bed—sleep .....
Heavy—hard .....
Tobacco—smoke .....
Baby—child .....
Moon—light .....
Scissors—cut .....
Quiet—still .....
Green—color .....
Salt—sour .....
Street—walk .....
King—queen .....
Cheese—butter .....
Blossom—flower .....
Afraid—fear .....

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CASE 48A.—J. R. Male. Age 15 years. Inmate of House of Refuge. First grade, grammar. Rated by teacher as backward; actual record, however, shows: in studies: excellent, fair; in industrial work: excellent, good; in conduct: excellent, bad. Test record normal.

Table—eat	Needle—sharp	Ocean—sea
Dark—color	Red—color	Head—eyes
Music—singing	Sleep—night	Stove—cool
Sickness—death	Anger—mad	Long—thin
Man—being	Carpet—rug	Religion—Jewish
Deep—hollow	Girl—female	Whiskey—wicked 10
Soft—feeling	High—tall	Child—baby
Eating—appetite	Working—bakeshop 17	Bitter—taste
Mountain—rocks	Sour—taste	Hammer—heavy
House—building	Earth—crust	Thirsty—water
Black—color	Trouble—mischief	City—Pittsburgh 17
Mutton—meat	Soldier—general	Square—angle
Comfort—home	Cabbage—vegetable	Butter—soft
Hand—palm	Hard—stone	Doctor—medicine
Short—small 1	Eagle—bird	Loud—soft
Fruit—apple	Stomach—belly	Thief—swindle 17
Butterfly—insect	Stem—thin	Lion—animal
Smooth—thin	Lamp—flame	Joy—happy 1
Command—order	Dream—sleep	Bed—mattress
Chair—sit	Yellow—color	Heavy—hard
Sweet—taste	Bread—food	Tobacco—smoking
Whistle—organ 17	Justice—right	Baby—infant
Woman—female	Boy—man 1	Moon—planet
Cold—weather	Light—feather	Scissors—cut
Slow—weak	Health—body	Quiet—still
Wish—dreaming 2	Bible—book	Green—color
River—water	Memory—mind	Salt—tasteless
White—color	Sheep—animals	Street—avenue
Beautiful—nice 1	Bath—water	King—crown
Window—pane	Cottage—house	Cheese—American
Rough—hard	Swift—quick	Blossom—flower
Citizen—countryman	Blue—color	Afraid—beating 17
Foot—heal	Hungry—eat	
Spider—insect	Priest—bishop	

CASE 104A.—G. M. Male. Age 22 years. Born in Russia. Inmate of House of Refuge. Fifth grade, grammar. Rated as backward by reason of being in a class too low for his age. Record is as follows: in studies: good; in industrial work: good; in conduct: excellent. Test record normal.

Table—eat	Needle—steel	Ocean—water
Dark—light	Red—color	Head—body
Music—hear	Sleep—lay 2	Stove—fire
Sickness—doctor	Anger—mad	Long—big
Man—human	Carpet—lay	Religion—holy
Deep—low	Girl—woman 1	Whiskey—drink
Soft—feel	High—up	Child—baby
Eating—stomach	Working—occupation	Bitter—taste
Mountain—high	Sour—taste	Hammer—tool
House—place	Earth—round	Thirsty—drink
Black—color	Trouble—fight	City—place
Mutton—meat	Soldier—man 1	Square—round
Comfort—nice 1	Cabbage—vegetable	Butter—eat
Hand—right	Hard—ball	Doctor—sick
Short—long	Eagle—bird	Loud—vapor 19
Fruit—eat	Stomach—heart	Thief—man 1
Butterfly—animal	Stem—leaf	Lion—animal
Smooth—rough	Lamp—light	Joy—ride
Command—order	Dream—something	Bed—sleep
Chair—sit	Yellow—color	Heavy—load
Sweet—taste	Bread—eat	Tobacco—smoke
Whistle—noise	Justice—something 15	Baby—child
Woman—lady	Boy—man 1	Moon—light
Cold—hot	Light—dark	Scissors—cut
Slow—fast	Health—good 1	Quiet—still
Wish—something	Bible—read	Green—color
River—water	Memory—good 1	Salt—taste
White—color	Sheep—animal	Street—block
Beautiful—nice 1	Bath—boy	King—man 1
Window—look	Cottage—house	Cheese—eat
Rough—hard	Swift—quick	Blossom—flower
Citizen—man 1	Blue—color	Afraid—brave
Foot—leg	Hungry—eat	
Spider—insect	Priest—man 1	

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CASE 62A.—C. H. Male. Age 18 years. Inmate of House of Refuge. Disobedience toward parents. Seventh grade, grammar. Rated as backward by reason of being in a class too low for his age. Record in studies: good, fair; in industrial work: good, fair; in conduct: good. Test record normal.

Table—measure 19	Needle—sew	Ocean—ships .....
Dark—color	Red—apple	Head—hair .....
Music—piano	Sleep—night	Stove—fire .....
Sickness—measles	Anger—lion	Long—miles .....
Man—officer 17	Carpet—designs 2	Religion—God .....
Deep—river	Girl—sister	Whiskey—intoxicating ..
Soft—powder 19	High—chimney 17	Child—baby .....
Eating—cake	Working—father	Bitter—medicine .....
Mountain—country	Sour—pickle	Hammer—nails .....
House—home	Earth—dirt	Thirsty—drink .....
Black—shoes	Trouble—fight	City—New York .....
Mutton—meat	Soldier—war	Square—Madison .....
Comfort—warm	Cabbage—vegetable	Butter—bread .....
Hand—ball	Hard—stone	Doctor—sickness .....
Short—pin	Eagle—bird	Loud—talk .....
Fruit—orange	Stomach—eating	Thief—steal .....
Butterfly—insect	Stem—flower	Lion—show 19
Smooth—glass	Lamp—light	Joy—fun .....
Command—go	Dream—sleep	Bed—sleep .....
Chair—sit	Yellow—orange	Heavy—lead .....
Sweet—candy	Bread—butter	Tobacco—smoke .....
Whistle—noise	Justice—judge	Baby—mother .....
Woman—mother	Boy—brother	Moon—night .....
Cold—winter	Light—daytime	Scissors—cut .....
Slow—snail	Health—doctor	Quiet—night .....
Wish—want	Bible—God	Green—color .....
River—fish	Memory—remember	Salt—tomatoes 17
White—snow	Sheep—flock	Street—block .....
Beautiful—flowers	Bath—water	King—England .....
Window—look	Cottage—door	Cheese—nice..... 1
Rough—file	Swift—race	Blossom—lilacs .....
Citizen—man 1	Blue—gum 19	Afraid—cat .....
Foot—sox 17	Hungry—food	
Spider—web	Priest—chapel	

CASE 133A.—S. P. Female. Age 14 years. Pupil in public school. Rated as backward by teachers. No detailed information available. Test record normal.

Table—eat	Needle—sewing	Ocean—stream .....
Dark—night	Red—color	Head—brains .....
Music—song	Sleep—motion 19	Stove—heat .....
Sickness—ill	Anger—mad	Long—short .....
Man—father	Carpet—covering	Religion—character 19
Deep—distance	Girl—child	Whiskey—drink .....
Soft—easy	High—distance	Child—baby .....
Eating—motion	Working—action 2	Bitter—sweet .....
Mountain—hill	Sour—sweet	Hammer—noise .....
House—building	Earth—black	Thirsty—drinking .....
Black—color	Trouble—uneasy	City—country .....
Mutton—eat	Soldier—brave	Square—round .....
Comfort—sitting	Cabbage—eatable	Butter—yellow .....
Hand—helping	Hard—soft	Doctor—gentleman .....
Short—distance	Eagle—bird	Loud—soft .....
Fruit—apple	Stomach—eating	Thief—steal .....
Butterfly—bird	Stem—handle	Lion—animal .....
Smooth—soft	Lamp—light	Joy—happy 1
Command—doing	Dream—sleep	Bed—sleep .....
Chair—sitting	Yellow—rose	Heavy—light.....
Sweet—taste	Bread—eatable	Tobacco—smoke .....
Whistle—noise	Justice—right	Baby—child .....
Woman—girl	Boy—man 1	Moon—sun .....
Cold—shivering	Light—dark	Scissors—cut .....
Slow—running 2	Health—sick	Quiet—noise .....
Wish—thought 1	Bible—book	Green—color .....
River—water	Memory—think 1	Salt—taste .....
White—color	Sheep—animal	Street—avenue .....
Beautiful—pretty 1	Bath—water	King—head .....
Window—looking	Cottage—house	Cheese—eatable .....
Rough—hard	Swift—running	Blossom—flower .....
Citizen—man 1	Blue—color	Afraid—quiet .....
Foot—standing	Hungry—feeling	
Spider—creeping	Priest—bishop	

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CASE 115A.—C. H. Female. Age 15 years. Pupil in public school. Rated as backward by teacher. No detailed information available. Test record normal.

Table—eat	Needle—point	Ocean—water
Dark—night	Red—dress	Head—body
Music—melody	Sleep—dog 19	Stove—iron
Sickness—ill	Anger—cat	Long—board
Man—male	Carpet—covering	Religion—church
Deep—water	Girl—young	Whiskey—distillery
Soft—earth	High—mountain	Child—baby
Eating—food	Working—child 19	Bitter—horrible 2
Mountain—stone	Sour—milk	Hammer—iron
House—abode	Earth—dirt	Thirsty—water
Black—dark	Trouble—sickness	City—people 1
Mutton—meat	Soldier—man 1	Square—wood
Comfort—rest	Cabbage—vegetable	Butter—salt
Hand—body	Hard—wood	Doctor—physician
Short—small 1	Eagle—bird	Loud—holler
Fruit—eatable	Stomach—body	Thief—steal
Butterfly—insect	Stem—flower	Lion—animal
Smooth—paper	Lamp—chimney	Joy—gladness
Command—order	Dream—sleep	Bed—mattress
Chair—sit	Yellow—color	Heavy—box
Sweet—fruit	Bread—flour	Tobacco—smoke
Whistle—noise	Justice—court	Baby—child
Woman—girl	Boy—male	Moon—sun
Cold—air	Light—color	Scissors—cut
Slow—easy	Health—sickness	Quiet—sound
Wish—watch	Bible—book	Green—color
River—water	Memory—mind	Salt—white
White—cloth	Sheep—animal	Street—houses
Beautiful—girl	Bath—girl 15	King—man 1
Window—glass	Cottage—house	Cheese—butter
Rough—paper	Swift—fast	Blossom—flower
Citizen—man 1	Blue—color	Afraid—scared
Foot—man 1	Hungry—eating	
Spider—insect	Priest—clergy	

§ 4. ASSOCIATION IN NORMAL CHILDREN.

The findings in cases of arrested or retarded development naturally raise the question: At what age in childhood or in youth do the associational tendencies, as they are observed in normal adults, become fully developed, and what is the rate and manner of their development? Although we have collected a considerable number of records of tests made upon normal children, we have, unfortunately, not enough such material to afford a full answer to this question.[1] We find, however, on examining a small number of records (fifteen records obtained from children under eight years of age and fifteen from children over ten years of age) that in children under eight years of age some of the associational tendencies resemble those of older subjects who are feeble-minded, while children over ten years of age furnish records much like

[1] The need of normal standards of association for the various ages of childhood is obvious. Arrangements have been made to secure material for constructing such standards.

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those of normal adults. It would seem, further, that while failure of reaction and the tendency to give undue numbers of individual reactions appear in the younger children as prominently as they do in feeble-minded subjects, or even more so, the tendency to respond by non-specific reactions which is so frequently observed in feeble-minded subjects, is in young children so slight as to be entirely negligible, being even far below the average for normal adult subjects.

The findings of the small group of normal children are given in Table IV.

TABLE IV.

Types of reaction.	Children under 8 years of age.	Children over 10 years of age.
Specific reactions	59.7%	85.5%
Non-specific reactions	2.9%	6.8%
Doubtful reactions	3.6%	0.8%
Individual reactions	22.9%	6.6%
Failures of reaction	10.9%	0.8%

§ 5. CONCLUSIONS.

States of arrested mental development present certain fairly characteristic associational tendencies.

These tendencies are characterized mainly by failures of reaction, non-specific reactions, and certain types of individual reactions.

The association test, as employed in the present study, is an aid in the diagnosis of feeble-mindedness.

ACKNOWLEDGMENTS.

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THE CLINICAL INTERPRETATIONS OF THE SEROLOGICAL CONTENT OF THE BLOOD AND CEREBRO-SPINAL FLUID, WITH SOME REFERENCE TO THE CYTOLOGY AND CHEMISTRY OF THE LATTER, IN MENTAL DISEASES.*

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INTRODUCTION.

In the study of the interpretation of clinical phenomena, the laboratory forms an important adjuvant. In the pre-Wassermann epoch cytological and chemical examination of the cerebro-spinal fluid aided us in understanding certain types of organic reactions and in making finer differentiations. Recent researches in serology have furthered our knowledge of clinical forms of organic psychoses and obscure nervous affections. The invaluable studies of Plaut, Nonne, Holzmann, Marie, and scores of others have thrown much light on modern psychiatry and neurology. Space does not permit one to review exhaustively the literature on the subject.

In this communication the writer desires to set forth the results of his investigations which were undertaken during the year of 1911 in conjunction with Dr. D. M. Kaplan and Dr. L. Casamajor, of the New York Neurological Institute, New York City. The laboratory work was done in the New York Neurological Institute by Drs. Kaplan and Casamajor. Brief reference only to the technique of the Wassermann reaction and the method of the chemical and cytological examination could be made here, and for more complete knowledge of the subject the reader is referred to the original communication of Dr. Kaplan and Dr. Casamajor,

* Paper read in part at the New York State inter-hospital meeting held at Manhattan State Hospital, Ward's Island, New York City, January 25-26, 1912.

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which is published in Archives of Internal Medicine, Vol. 9, pp. 262-272 (Feb., 1912).

The following methods were employed:

The Wassermann Reaction.

The original Wassermann technique was used, plus the Landsteiner modification. The dose of cerebro-spinal fluid was 0.5 cubic centimeter. The controls were known positive and negative sera, amboceptor efficiency, antigenic interference and auto-inhibition. Standardization was performed on the day of the testing of the sera. Only unequivocal positive results were considered. However, weakly positive, nearly positive, or almost complete inhibition were not included among the positive results, but were regarded as negative.

The Spinal Fluid.

The cells were counted by the Fuchs-Rosenthal method. In view of the fact that some fluids contain substances which are capable of digesting cells, it is necessary to count the cells on the same day they are obtained; in some of our cases the fluids were examined twenty-four or forty-eight hours later—the fluids were kept in the refrigerator. To determine the globulin content, Kaplan's method was employed. This consists in using gradually diminishing quantities of cerebro-spinal fluid from 0.5 cubic centimeter to 0.1 cubic centimeter, increasing the smaller quantities to 0.5 cubic centimeter with distilled water. The tubes are heated to boiling and three drops of a five per cent solution of butyric acid added. To this is added 0.5 cubic centimeter of a saturated solution of ammonium sulphate, allowing the solution to flow under the spinal fluid very gently by holding the tube almost horizontal. The diameter of the tubes used is one centimeter. When the globulin is excessive in amount, a ring is obtained in the various tubes. If this be very great, it may be obtained in the tube containing but 0.1 cubic centimeter of fluid with 0.4 cubic centimeter of water. For instance, where this excess is not very marked, the ring is not obtainable with the diluted fluid. The ring is usually seen twenty minutes after the addition of the ammonium sulphate, and only those tubes are considered as containing an excess of globulin that show a thick granular ring.*

The reliability of the technique cannot be questioned, although mistakes in the course of laboratory process are liable to occur and at times are unavoidable.

The writer's part in these investigations was purely clinical; he was responsible for the selection of the clinical material and for the diagnostic classification and correlation of the clinical findings with the laboratory results. Three hundred cases were available for our investigations. However, only two hundred

* Furnished by Dr. D. M. Kaplan.

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twenty-two cases were selected for our studies. We were forced to eliminate certain cases in which the diagnoses were not very clear.

We may divide our material into two main groups: first, laboratory findings presenting specific pathological phenomena; and, second, laboratory findings without abnormal manifestations. The first group includes general paralysis, cerebro-spinal syphilis, and tabes. The second group consists of organic psychoses of a non-luetic nature, toxic psychoses, epileptic psychoses, and functional psychoses.

First Group.

A. GENERAL PARALYSIS.

According to many investigators, serological, chemical, and cytological findings, in general paralysis, are of definite value. The Wassermann reaction is especially of great interest. It is maintained by many that in all cases of general paralysis both the blood and fluid show complement deviation. However, in the literature the results of different investigators are varied. Plaut in a very recent communication compiled the statistics of the various investigators, but accepted only those which were free from criticism as far as the method and technique of the Wassermann were concerned. He collected seven hundred ninety-three sera and eight hundred fifty-four cerebro-spinal fluids of general paralytics; ninety-two per cent of the sera and eighty-nine per cent of the fluids gave a positive reaction. The serum reacts with greater regularity than the fluid and these observations have been substantiated by more recent workers, especially by Boas and Neve, of Copenhagen. The French investigators claim that the serum in paretics reacts less positively than the fluid, but Plaut maintains that in such cases the error should be attributed to laboratory technique. In Plaut's experience, a negative serum reaction in paresis in very rare; of three hundred twenty cases, only two were negative. Edel's, Nonne-Holzmann's, Bendixsohn's, Kafka's, Donath's, Marinesco's, and Boas and Neve's records reveal one hundred per cent of complement deviation in general paralysis. Only nine of Plaut's two hundred seventy-six cases of paresis gave a negative Wassermann reaction of spinal fluid, and in one of them the serum showed a negative reaction. Ac-

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cording to the French observers, the Wassermann reaction bears some relation to the course of general paralysis: In the early stages, the serum is usually positive; in the fully developed stage, both serum and fluid are positive, and in the last stages of the disease, the fluid alone gives a positive reaction. Plaut does not adhere to this view and he declares most emphatically that in the incipient stage of general paralysis both the cerebro-spinal fluid and serum show complement deviation, and, doubtless, this phenomenon can be observed before the clinical symptoms become fully developed. According to his experience, should the reaction be weak in the early stages of paresis, it remains so *usque ad finem.* Many observations tend to show that a weak complement deviation is suggestive of a remission or a stationary course of disease.

Such observers as Aldt, Eichelberg and Pförtner, and Kafka, saw a positive Wassermann reaction in the fluid, but not in the serum. The following table will show the results of the various observers:

	General Paralysis. Positive.		Negative.	
	Liquid.	Blood.	Liquid.	Blood.
Zalociecki	8	42	4	2
Smith-Candler	59	..	5	..
Bendixsohn	8	14	1	0
Eichelberg-Pförtner	16	14	0	2
Kafka	52	8	6	3
Rossi	15	15	0	0
Nonne-Holzmann	22	23	1	0
Edel-Lesser	..	64	..	1
Donath	..	17	..	0
Höhne	..	24	..	6
Marinesco	32	35	3	0
Plaut	64	89	1	0

We had one hundred cases of general paralysis; seventy-two were fully developed and the diagnosis was undoubted; twenty-two cases of general paralysis in the last stage; and in six cases the diagnosis was unquestionable, but nevertheless, the laboratory findings presented paradoxical results.

a. *Seventy-two fully Developed Cases of General Paralysis.*—Forty-nine of the seventy-two cases showed a positive Wassermann reaction in the blood and fluid. Globulin excess was also

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demonstrable in all of them. In all instances, except one, lymphocytosis was present. In that case there were only three lymphocytes per cubic millimeter. In some cases lymphocytosis was as high as two hundred forty-eight, one hundred twenty-six, and one hundred five per cubic millimeter. The average cell-count was forty lymphocytes per cubic millimeter. In five cases polynuclear leucocytes were observed; the number varied between three and twelve. Of these forty-nine cases, forty-four were cerebral form, three tabetic, and two mixed form.

It is extremely interesting to note that in only twelve cases a positive history of syphilis was obtained; in twenty-two cases the history was suspicious, and in fifteen cases luetic infection was denied.

In seven cases the Wassermann test was positive in the blood but negative in the fluid; one of these cases was re-examined and no complement deviation was observed in either the blood or fluid. In all cases, except two, globulin was increased. Lymphocytosis was demonstrated in six out of seven cases. In the negative Wassermann case globulin was also absent, and it is important to note that the patient was treated with salvarsan shortly before the examination of the blood and fluid. The lymphocytes varied between fifteen and one hundred nine per cubic millimeter, the average being forty. In only one case four polynuclear leucocytes were recorded.

Of these seven patients a history of syphilis was elicited in four; in two, syphilis was suspicious; and in two, no luetic infection could be determined. Five cases were cerebral form, two tabetic form of paresis.

In four cases the Wassermann test was positive in the fluid, but the blood was not examined. Globulin and lymphocytosis were determined in all of them, the average cell-count being thirty-two lymphocytes per cubic millimeter. In one instance only, plasma cells were seen. In one case there was a positive history of syphilis, in two suspicious, and in one negative. All of these cases were cerebral form.

In nine cases the Wassermann test was negative in the blood and positive in the fluid; in one case globulin was weakly positive, and in another, globulin was not obtained; in the remaining seven cases globulin was present. The lymphocytes ranged between

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fifteen and eighty-one per cubic millimeter, averaging about forty-one; in two cases plasma cells were found, and in one instance polynuclear leucocytes were in evidence. In six cases a history of syphilis was obtained, in three it was suspected, and one, denied. All of them were cerebral form.

In three cases the Wassermann reaction was not elicited in the fluid or serum; one of these patients was re-examined and at this time Wassermann test was negative in the serum, but positive in the fluid. In two cases only the globulin was negative. The cells varied between thirteen and eighty-eight per cubic millimeter, the average being forty-three. In all these cases a certain history of syphilis could not be obtained. These cases were cerebral form.

b. *Twenty-two Cases of General Paralysis in the Last Stage.*—In fourteen out of the twenty-two cases a positive reaction in the blood and fluid was determined, and a globulin increase was present. The lymphocytes varied between twelve and one hundred fifty-eight cells per cubic millimeter, the average being fifty-seven. In four cases polynuclear leucocytes were observed, ranging from one to forty-five per cubic millimeter.

Only three patients admitted syphilis; in five syphilis was not determined, and in six there was a suspicion of luetic infection. Thirteen were cerebral and one tabetic form.

One case showed a negative Wassermann in the blood and fluid, and globulin was not in excess; a second specimen of the fluid and blood was obtained and the results were again negative. In this particular case the first cell-count was three and the second was twenty-three lymphocytes per cubic millimeter. The case is no doubt one of general paralysis, although a history of syphilis could not be satisfactorily established. This case was cerebral form of paresis.

In seven cases the Wassermann test was negative in the serum and positive in the blood. One of these patients was re-examined and similar results were obtained. The cell-count varied between five and forty-nine, averaging about twenty-one. In four cases there was a history of syphilis; in two, syphilis was very suspicious, and in one, denied. Five cases were cerebral and two tabetic form of paresis.

c. *Cases in which the Diagnosis of Paresis is Undoubted; however, Laboratory Findings did not Support the Clinical Diagno-*

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sis.—We had seven cases of general paralysis in which the diagnosis could not be questioned; nevertheless, the laboratory report was atypical, but by reason of the fact that the clinical phenomena were well defined, the diagnosis of general paralysis was retained in spite of the negative laboratory findings. It will not be amiss to give a brief outline of these cases:

CASE No. 1.—A. S. Admitted Dec. 7, 1910, æt. 50, male, white, married. Syphilis not determined. Physically patient shows irregular pupils which did not react to light; tremor of tongue and fingers; over-active knee jerks; ataxic gait and station; writing and speech defect.

The mental status: Slow development, progressive and gradual mental decline; at present patient shows marked dementia, his speech is so defective that he is unable to coöperate with the examiner. He usually lies in bed, wets and soils himself, and leads a vegetative existence. The findings were as follows:

	First report.	Second report.	Third report.
Serum	Negative.	Negative.	Negative.
Fluid	Negative.	Positive.	Negative.
Globulin	Negative.	Positive.	Negative.
Cells	Five.	Nine.	Five.

CASE No. 2, with autopsy.—R. L. Admitted June 15, 1911, æt. 58, American, male, white. No history of syphilis; chronic alcoholic. The development of the psychosis was not well determined, probably of about one year's duration.

When admitted to this hospital, physical examination showed unequal and slightly irregular pupils, which reacted sluggishly to light; active knee jerks; coarse tremor of both hands; slight slurring speech, and some writing defect.

Mentally, the patient was euphoric, gave expression to a few grandiose ideas, declared he had sixty million dollars; was rather boastful in his demeanor; he was poorly oriented, and gave a very meager and inconsistent account of himself; retention was defective.*

	First report.	Second report.
Serum	Negative.	Positive.
Fluid	Negative.	Positive.
Globulin	Negative.	Positive.
Cells	Seven.	Twenty-eight.

*His mental dilapidation was gradual and progressive, and he died August 15, 1911. Autopsy showed the usual histologic picture of general paralysis.

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CASE No. 3.—C. S. Admitted Dec. 23, 1910, æt. 57, German, married, history of syphilis, habits moderate, laborer.

For about three or four years prior to his admission to the hospital, patient had trouble with his gait and was forced to walk backwards while descending stairs. He complained of shooting pains in his back and legs; at this time he expressed ideas of grandeur. For the past year he did odd jobs and could not hold regular positions. His conduct was erratic and his memory was considered poor. Shortly before his commitment he had convulsions.

Here physical examination showed sluggish pupillary reaction; some deafness; ataxic gait; ataxic station; coarse tremors of facial mucles and fingers.

Mentally, patient was rather dull, inclined to be irritable; had ideas of jealousy; was fairly well oriented; his retention was poor and likewise his memory was not good.

At the present time patient is quiet, manifests no interest in the general affairs of life, usually remains seated in one place, and only at times will he do a little light work. He is oriented, gives an account of himself, and few date discrepancies are elicited, which are not very grave. He wears a mask-like expression. He states that he is not insane and attributes his trouble to his wife, and accuses her of being untrue to him.

Physical condition at present: Unequal pupils which are irregular in outline and react to light sluggishly, especially the right one; knee jerks are over-active and Achilles reflex is present; there is no Romberg, there are no tremors; no apparent writing defect or speech defect. He is not incontinent.

	First report.	Second report.	Third report.
Serum.....	Negative.	Negative.	Positive.
Fluid.....	Negative.	Negative.	Positive.
Globulin.....	Negative.	Negative.	Positive.
Cells.....	None.	Five.	Eight.

CASE No. 4.— C. H. Admitted May 15, 1911, æt. 54, Austrian, male, white, waiter, single. History of syphilis not determined.

Physically, he showed the following: irregular small pupils which did not react to light; absent knee and Achilles jerks; coarse tremor of both

	First report.	Second report.	Third report.	Fourth report.
Serum.....	Negative.	Negative.	Positive.	Positive.
Fluid.....	Negative.	Suspicious.	Positive.	Positive.
Globulin.....	Negative.	Negative.	Positive.	Positive.
Cells.....	Five.	Twenty-one.	Five.	Eleven.

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hands; slurring speech and markedly defective writing; gait and station ataxic.

The mental picture is one of marked mental dilapidation with very grave memory, retention and orientation defect. At one time he had a few grandiose ideas and in the early beginning of the disease his mood was one of exaltation.

CASE No. 5.—J. E. Admitted April 23, 1910, æt. 48, Ireland, history of syphilis, alcoholic, married, gradual onset with peculiar behavior and defective memory.

Physical condition: Ataxic gait and station; slurring and ataxic speech; small pupils which do not react to light; over-active knee jerks; writing defect and speech defect.

Mentally, patient shows marked dementia without trends; he is unable to give an account of himself because his speech is so markedly defective and also because he is so demented.

	First report.	Second report.	Third report.
Serum.....	Negative.	Negative.	Negative.
Fluid.....	Negative.	Negative.	Negative.
Globulin.....	Negative.	Negative.	Negative.
Cells.....	Fourteen.	Four.	Three.

CASE No. 6.—J. M. Admitted Sept. 22, 1910, æt. 44, married, syphilis not determined, temperate.

About seven months prior to admission he became paralyzed in both legs, and at the same time began to have dizzy spells and headaches. Soon paralysis disappeared, but he had difficulty in descending the stairs. However, off and on, he would get an attack of paralysis. Three weeks before commitment he began to worry, thought his wife would leave him, and attempted suicide. He grew restless and excited, and had to be committed.

In the hospital, physical examination revealed irregular, unequal pupils, with a limited range of light reaction; deep reflexes exaggerated, especially the knee jerks, which were unequal; tremors of both hands, tongue and at times facial muscles; speech and writing defect; gait and station ataxic; Wassermann in the blood and serum negative; globulin negative, three lymphocytes per cubic millimeter.

Another extremely interesting case came under our observation which at one time was regarded as one of general paralysis, although the laboratory findings were negative; however, autopsy showed that it was a case of arteriosclerosis, not of syphilitic genesis.

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Patient was admitted to the hospital June 10, 1909, æt. 42, American, Negro, janitor, married, habits moderate.

It was said that the patient had dizzy spells since the age of 27. About 18 months prior to his admission to the hospital he became dizzy and talked at random. His speech was thick and it was thought that he had at that time a paralytic stroke. Soon he improved and was able to attend to his work. In the early part of June, 1909, he became again unconscious and was unable to use his body. On the fourth day he became excited, talked unintelligently, and was then sent to the hospital.

Upon admission here, physically he showed exaggerated deep reflexes, sluggish pupillary reaction, scars of old ulcers on legs, and some speech defect.

Mentally he was elated, poorly oriented, at times his answers were irrelevant; he gave a very poor account of himself and his memory, both for remote and recent past, was very defective. In general he appeared rather sluggish in comprehending questions, and indeed at times he could not understand the meaning of a simple question. Soon after his admission he became more quiet and was better oriented, but the intellectual defects stood out prominently in the foreground.

After some residence in this hospital the patient was discharged on contract with a diagnosis of general paralysis.

March 22, 1911, he was readmitted, and at that time examination showed coarse tremor of facial muscles and fingers, exaggerated knee jerks, marked arteriosclerosis, and pupils of a doubtful reaction.

Mentally, the patient was dull, but rather euphoric. His replies were not to the point, and he was mentally deteriorated, which was evidenced in memory and judgment. His speech was slurring and sticking. He was unable to write his name and only made a few illegible scrawls. June 8, 1911, he died.

It is very important to note that in this case Wassermann test was negative in the blood and fluid; there was no globulin. Unfortunately, the fluid was contaminated with blood, but in spite of that no lymphocytes were demonstrable; there were one hundred twelve red cells per cubic millimeter.

Autopsy in this case showed no evidence of paresis. The histologic picture was one of arteriosclerosis of a non-luetic origin.

B. CEREBRO-SPINAL SYPHILIS.

Plaut was the first one to call attention to the fact that in cerebro-spinal syphilis, irrespective of the pathological process—meningitic, gummatous, or endarteritic form—*the Wassermann reaction is positive in the serum and negative in the fluid.* According to this author, *this is an important point in making the differentiation between general paralysis and syphilis of the central nervous system.*

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In Plaut's monograph we find eighteen cases of cerebro-spinal lues which he divides into three groups: fourteen cases gave negative reaction of the spinal fluid, but a positive serum reaction; three cases with positive reaction in both serum and spinal fluid; and one case in which cerebro-spinal fluid and serum were negative. In a more recent contribution, Plaut reported thirty-seven cases of cerebro-spinal syphilis, and in only four fluids the Wassermann test was weakly positive. Plaut is of the opinion that in border-line cases, where the diagnosis lies between general paralysis and cerebro-spinal syphilis, the Wassermann test is of doubtful value, and great caution should be exercised in interpreting results. A marked positive reaction of the fluid argues in behalf of general paralysis; a negative fluid reaction does not necessarily rule out general paralysis, for there are cases on record in which the fluid was negative. If both the fluid and serum be negative, cerebro-spinal syphilis might be considered.

Nonne and Holzmann examined the sera in twenty-two cases and found negative Wassermann reaction in two instances; and of twenty-seven fluids in only one complement deviation was present. Saathoff's twenty-five cases of syphilitic brain and cord disease—fifty per cent of which were confirmed by autopsy and treatment—showed a positive Wassermann reaction in the serum. Eichelberg and Pförtner demonstrated a positive reaction in the serum of their seven cases, and six fluids reacted negatively. They maintain that a positive fluid is suggestive of paresis. In Bendixsohn's eight cases complement deviation in the serum was elicited, and two fluids were positive; one of these developed into an undoubted case of paresis and the other one was rather under suspicion. Of Zalociecki's three cases, two showed a negative Wassermann test, but they had been treated with anti-syphilitic remedies. Also Sonnenberg had one negative serum in his seven cases. However, of Rheinhart's forty cases, sixty per cent were positive in the serum, and Pürkhauer's five out of eleven cases gave negative results. In Kafka's seven cases complement deviation was demonstrable in the serum and in one fluid only.

In cerebro-syphilis, as in general paralysis, lymphocytosis is usually present; in more acute processes the cell-count is high and frequently polynuclear leucocytes are observed. Globulin content, especially in acute conditions, is invariably increased.

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Our material consists of ten cases, two of which came to autopsy; in the others the diagnosis of cerebral syphilis clinically is rather suggestive. In this communication only brief mention will be made of them. In another contribution, the author will give the clinical data more in detail. We may divide our cases into three groups: First, gummatous; second, meningeal; and third, endarteritic.

I. Gummatous.

(One case with autopsy.)

Case I.—The patient was fifty years of age; intemperate. The development of the disorder was not known. Physically he showed irregular pupils which reacted to light; exaggerated knee jerks; tenderness over nerve trunks; some arteriosclerosis; no ankle clonus or Babinski; albumen with pus and epithelial cells in the urine. Mentally patient was dull, inactive, rather confused and muttered unintelligibly. He had difficulty in comprehending questions; could not carry out simple commands; and there were evidences of paraphasia. Soon after admission to the hospital he succumbed to pneumonia.

Post-mortem examination showed cerebro-spinal meningitis, solitary gumma beneath the left prefrontal, and there were no evidences of paretic process.

The laboratory findings were as follows: *Wassermann test in blood positive; negative in the fluid; globulin present; fifty-two lymphocytes per cubic millimeter.*

Case II.—L. P. Was admitted June 9, 1905, and re-admitted Aug. 9, 1906; age 37; married; led an irregular sexual life; history of syphilis could not be determined.

In 1903, two years prior to her admission, she began to complain of pain in the back and head (temporal region); became suspicious of her husband, and four months before admission she began to have vomiting which was independent of ingestion of food. Two months later convulsions were manifest. Usually after the convulsions she would become confused, and in one of these states she grew restless and tried to run away.

Upon admission to the hospital she was quiet, pleasant and smiled good-naturedly; she stated that she had fainting attacks. She was oriented and her memory was said to be good. The writing was slightly tremulous and letters were poorly formed. She admitted that she was not well mentally and because she was absent-minded and had imaginations.

Physically, exaggerated knee jerks; unequal, sluggish pupils; some evidences of healed ulcer of the tongue, and positive lymphocytosis of the cerebro-spinal fluid were noted. During her residence in the hospital she had convulsions, and in August, 1905, symptoms of motor aphasia, with right-sided hemiplegia, developed. In November, 1905, optic neuritis (W. A. Holden) and swelling over zygomatic region were observed. She was sub-

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jected to anti-syphilitic treatment, and soon aphasic symptoms disappeared. April 9, 1906, she was allowed to go home, and at that time she was described as simple in her manner; had vague ideas about her future; however, her memory was good; and her speech showed some defect in handling the usual test phrases.

August 1, 1906, she was re-admitted to the hospital. During her residence here patient's condition shows no important changes. At times she is irritable and resents her detention; at other times she is pleasant and agreeable; employs herself fairly efficiently, and takes good care of her person. She exhibits faulty judgment. Her memory for remote happenings is poor, although orientation is fairly good. There are no hallucinations or delusions. She has had convulsions which were general, and on several occasions they were limited to the right side; she is also subject to fainting attacks.

Her physical health is good; residuals of right-sided hemiplegia; mobile pupils; over-active knee jerks; no tremors; no defect in speech in ordinary conversation.

Wassermann in the blood is positive; negative in the fluid; one lymphocyte per cubic millimeter; no increase of globulin.

CASE III.—G. F. Admitted January 3, 1908, æt. 44; Russian-Hebrew; syphilis not determined; however, there is suspicious history of syphilis; led an irregular sexual life; three children died in convulsions before one year old, and one still birth, and one died a few hours after birth. She had two attacks of excitement, for which she was treated in a hospital for the insane; it is said that she made a complete recovery.

The psychosis became manifest in June, 1907. The early symptoms were depression, volubility of speech, and headache. For three days patient was in coma. In November and December, 1907, she was restless, confused, and at times apathetic and inactive. In the hospital the patient was decidedly manic; however, at times she reacted to hallucinations which were accompanied by apprehension. On account of her inaccessibility, it was impossible to test her memory or orientation.

Physical status: In June, 1907, she suffered with headache, dizziness, diplopia, and had one convulsion. In October, 1907, choked discs with retinal hemorrhages were noticed, which cleared up on anti-luetic treatment. The right pupil is immobile and larger than the left one; unequal knee jerks, right more active; the right side of the face is slightly elongated; no tremors.

Wassermann test in the blood is positive; negative in the fluid; no globulin; seven lymphocytes per cubic millimeter.

II. MENINGITIC.

CASE IV.—E. P. Admitted November 2, 1910, æt. 40; U. S. A.; widow; the development of the psychosis was not known. While in a general hospital in New York she was noted as confused, reacting to auditory hallucinations and misidentifying those about her.

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When admitted to the Manhattan State Hospital, physical examination showed complete paralysis of the left third and fourth cranial nerves; unequal, irregular pupils (right smaller than left) which reacted sluggishly to light; marked exophthalmus; occasional nystagmoid twitchings in both eyes; unequal and exaggerated knee jerks (left more active); suspicion of Babinski and Oppenheim (left); marked Romberg; gait poor; tremor of tongue and both hands; inability to pronounce the usual test phrases; tenderness of both lower and upper extremities; incontinence of both vesical and rectal reflexes.

Wassermann test in the blood was positive; however, negative in the fluid; globulin positive; one hundred twenty-one lymphocytes per cubic millimeter.

The mental picture was one of marked irritability, with confusion and fabrications. Orientation, memory and retention were very poor. She was unable to give a connected account of herself. She exhibited no insight; hallucinations or delusions were not demonstrated. Writing, aside from tremor, presented no defect.

In the early part of December, partial ptosis (right eye) was observed, and the pupils reacted more sluggishly to light.

In February, 1911, the patient reacted to hallucinations. At that time deviation of the tongue to left, with slight thinning of left side of face, was observed. In March, atrophy of the left side of the tongue was noted. Mental condition remained without important changes. Drastic antisyphilitic treatment was resorted to, but without avail. April 11, patient had a general convulsion and soon death occurred.

Post-mortem findings were as follows: *Syphilitic cerebral endarteritis; chronic syphilitic meningitis and ependymitis, and internal cerebral hemorrhage.*

III. Endarteritic.

Case V.—E. V. Admitted January 6, 1895, æt. 44; Italian; widow; no anamnesis. It is said that in 1890 she had a paralytic stroke, and since then patient has been paralyzed and a bed-ridden invalid. Physically she showed paralysis of both extremities, with involvement of the right upper extremities and right side of face; double Babinski, and some atrophies; thick speech, with poor articulation; unequal pupils (right dilated) which do not react to light. Paralysis of the third nerve (right); both knee jerks diminished, and the left one is questionable; inability to stand or walk. Wassermann in the blood is positive; negative in the fluid; no globulin, and only three lymphocytes per cubic millimeter.

Mentally, the patient is rather optimistic, exhibits a relatively good memory and orientation, and there are no psychotic trends. In other words, we have a mild degree of dementia without marked memory defect.

Case VI.—H. S. Re-admitted Aug. 20, 1910, æt. 35; New York; single; tinsmith. In 1903, he commenced to show signs of psychosis—ideas of reference, peculiar behavior and ideas of persecution. In 1904, he had a

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chancre. From March 19, 1904, to July 8, 1904, he was a patient in the hospital. At that time he spoke of women exerting telepathic influences, and had other queer ideas. After discharge he resumed his work, but grew forgetful, and often spoke of his delusions and hallucinations. Finally commitment was imperative.

When re-admitted he showed a very clear picture of dementia præcox, paranoid type, and during his stay here he gradually deteriorated.

Physically he presents the following: Irregular pupils, especially the right one; the reaction in the left is good, and the right poor; over-active knee jerks; no Babinski; paresis of left side of face.

Wassermann in the blood positive; fluid negative; globulin present; lymphocytes seventy.

In this case we have dementia præcox upon which syphilis was engrafted and produced some neurological signs.

CASE VII.—E. D. Admitted June 9, 1909, æt. 26; New York; single; intemperate; history of syphilis three years prior to admission to the hospital.

The psychosis was gradual, about twenty months' duration preceding his commitment; delusions of persecution; some depression, hallucinations and peculiar behavior were the prominent symptoms.

When admitted to the hospital physical status showed evidences of past syphilis, mobile pupils, exaggerated knee jerks, and some tremors of the tongue.

Mentally, he was suspicious, evasive, had some high opinion of his ability, and attributed his trouble to syphilis. He spoke volubly and in a rather disconnected manner. Although he denied hallucinations, yet some of his statements were rather suspicious of hallucinatory experiences. He was approximately oriented, and memory, retention and grasp showed no defect. Writing and speech were without anomalies.

During his residence in the hospital patient rapidly declined mentally. At present his speech is incoherent and memory is very poor. He shows considerable indifference, and his behavior is odd. Orientation is good.

Physically, knee jerks are exaggerated; some tremor of tongue; no speech defect; writing tremulous, but no omission of syllables noticed.

Wassermann of the blood positive; fluid negative; globulin present; lymphocytes forty-four.

In this case we have a dementia præcox picture with few physical signs, which could be either explained on paretic process or cerebral syphilis. For the present, the somatic manifestations are ascribed to *syphilis*, and the case is looked upon as one of cerebral syphilis.

CASE VIII.—M. H. Admitted January 17, 1911, æt. 45; widowed; bartender.

The patient was born in Germany 45 years ago. He indulged in alcoholic beverages, and at one time had an alcoholic psychosis for which he was treated in Bellevue Hospital. He had contracted syphilis in 1894. In August, 1910, he had an unconscious spell, from which he recovered. In

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September he complained of pains in his legs and knees, and suffered from headaches. At first he was buoyant in spirit, and later grew dull and apathetic. He had difficulty in deglutition and his speech became thick.

Upon admission to the hospital neurological status showed unequal and irregular pupils (right dilated and left contracted) which reacted promptly to light and accommodation; evidences of left-sided hemiplegia (including face); defective speech; tremor of tongue and facial muscles; writing revealed some omission of letters.

Wassermann in the blood positive; fluid negative; globulin positive, and there were one hundred forty-one cells.

Mentally the patient was dull, slightly depressed, spoke coherently and recounted the events of his life without showing any discrepancies in dates. Retention was fair, and orientation was not impaired; no psychotic trend determined. He exhibited good insight into his physical condition. Under anti-sphilitic treatment the lymphocytosis decreased to eleven cells per cubic millimeter, but the Wassermann in the blood was still reported positive.

This is one of the cases in which the diagnosis is obscure. The patient shows many signs of paresis with focal symptoms, yet cerebral syphilis cannot be very well excluded. From the neurological and cytological standpoint, the diagnosis would be cerebral lues. The diagnosis in this case is still in abeyance. This case serves to illustrate the difficulty one encounters in making a diagnosis of cerebral lues of a case *the clinical picture of which is so involved.*

CASE IX.—A. P. Admitted December 22, 1910, æt. 23; American-Italian; single; no history of syphilis. In 1908 patient had an attack of depression with suicidal attempt.

Shortly before admission to the hospital patient became depressed and attempted to shoot himself, and sustained a superficial gunshot wound over the right temporal region. In the hospital patient was depressed and hypersensitive, but without any defect in the intellectual field. He recovered and was discharged as "Depression not sufficiently differentiated."

Physical examination showed irregular pupils, which did not react to light, photophobia, and active knee jerks.

Wassermann in the blood and fluid was negative; globulin positive, and there were forty-seven cells.

This is probably a case of hereditary cerebral syphilis. At no time were there symptoms of paresis. At the time of his discharge he was perfectly well, but the *eye symptoms still persisted.*

CASE X.—T. B. Admitted January 21, 1911, æt. 50; Russian; married; syphilis not determined.

Shortly before his admission to the hospital he had chills and fever, for which he was treated in a general hospital. Following this he became depressed, could not walk, and at times appeared semi-stuporous. (Psychotic trends or peculiar behavior not observed.)

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Upon admission here physical examination showed unequal and irregular pupils which reacted slowly to light; diminished knee jerks, especially the left one; some arteriosclerosis; writing slightly tremulous, and there was a coarse tremor of both hands. There were no evidences of meningeal irritation.

Wassermann test in the serum was positive; negative in the fluid; marked globulin, and one hundred sixty lymphocytes and two hundred seventy-one leucocytes.

Mental picture was one of mild depression with a poor memory, but without delusions or hallucinations. He was rather an ignorant man and it was difficult to say whether the memory defect was acquired or peculiar to his makeup. He remained under our observation a very short time. He was deported to Russia.

In this case the diagnosis of cerebral syphilis would come up, but again a positive diagnosis could not be made. Serologically and cytologically cerebral syphilis is very probable; however, the writer is disinclined to make the diagnosis on purely laboratory findings.

C. TABES.

The investigations of tabes give varying results with different authors. Schütze found in sixty-five per cent of his cases a positive Wassermann in the serum and in eighty per cent the Wassermann test was positive in the fluid. Eichelberg and Pförtner's seven cases showed complement deviation in five fluids and six sera. Of Merinesco's fifteen cases, eight were positive in the fluid and twelve were positive in the serum. On the other hand Rheinhart had one hundred per cent of positive Wassermann reactions in the serum and fluid. Jacobstahl, Jarkowsky and Rajchman found the liquor positive and the serum negative. Of Nonne's cases fifty per cent were positive, and more recently the same author found of forty-nine cases only two fluids were positive, and in seventy per cent the serum gave a Wassermann reaction. Plaut's sixteen tabetics were mostly in the incipient stage of the disease; in six the spinal fluids reacted positively, one was slightly positive and three negative; the serum was positive in eight and negative in two. In only one instance the spinal fluid alone was examined, which was reported positive; in four cases the serum only was examined and one of them was negative. In a more recent contribution Plaut selected four hundred sera and one hundred twenty-seven spinal fluids of tabes; seventy-one per cent and fifty-nine per cent, respectively, showed a positive reaction.

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We had only two cases of tabes with psychosis, the results of which are as follows: In one, Wassermann reaction was present in the blood, but not in the fluid; globulin was only slightly increased, and there were one hundred two lymphocytes. In the other case the Wassermann test was negative in the blood and fluid; there was no globulin, and there were fifty-nine lymphocytes.

In another case the diagnosis is not very clear. The question of general paralysis and tabes with a psychosis comes up for consideration. If the laboratory findings in general paralysis be decidedly pathognomonic, then this case should be interpreted as one of paresis. At the present time, one is reluctant to make a diagnosis. The following is a brief report of the case:

TABES OR GENERAL PARALYSIS.

E. G. Admitted January 21, 1911, æt. 38; England; musician.

Patient was arrested for creating a disturbance on the street.

When admitted here the neurological status showed Argyll-Robertson pupils; very diminished knee jerks (only obtainable on reinforcement); Charcot joint (right foot); no tremors; no speech or writing defect; no Romberg sign. Wassermann in the blood and fluid was positive; globulin positive, and forty-two lymphocytes per cubic millimeter. Syphilis fourteen years ago.

The mental picture was one of manic-depressive excitement, with grandiose and expansive ideas and without memory defect, or faulty retention. Soon excitement simmered down; however, ideas of self-importance still persisted, but without any intellectual defect.

SECOND GROUP.

A. ORGANIC PSYCHOSIS OF A NON-LUETIC NATURE.

The clinician is well acquainted with the fact that we have certain forms of mental diseases which may simulate general paralysis or cerebro-spinal syphilis, and not infrequently a differential diagnosis is very difficult. In such instances the clinical laboratory is of great value, and especially in certain obscure conditions where the etiology is important to ascertain in order to institute early therapy. In our studies we have selected cases in which the clinical diagnosis was unmistakable. The object of obtaining laboratory findings was to determine their value in such conditions.

The literature on the subject is not abundant, and we may only briefly refer to some investigators. Nonne had ten cases of tumors with autopsies; in all of them the fluid was negative and

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the serum was positive only once. In that case the patient had a growth on his forehead, which disappeared under anti-syphilitic treatment. Saathoff and Rheinhart had similar results. Plaut's six cases also reacted negatively to the Wassermann test. We had three cases of brain tumor, one with autopsy, in which the Wassermann reaction was negative in the blood and fluid; there was no increase of globulin or lymphocytosis.

B. EPILEPTICS.

The Wassermann test and the chemical and cytological content of the cerebro-spinal fluid in epilepsy is not of striking significance. The laboratory findings are usually negative, unless the disease-picture is complicated by luetic infection. Nonne and Holzmann found five positive sera in their thirty-three cases of epilepsy, and in all of them the cerebro-spinal fluid showed no complement deviation. Nonne's former investigation of nine cases gave five positive sera; however, later it was demonstrated that one patient developed ataxia, hypotonus, diplopia and anosmia. Under mercurial treatment the symptoms disappeared. Another patient presented suspicious signs of cerebral lues. In two cases history of syphilis in the father was elicited. Convulsions subsided under treatment. In the last case, a syphilitic etiology could not be determined. Nonne and Holzmann maintain that the Wassermann reaction is wanting in idiopathic epilepsy without syphilis, but in cases with a positive Wassermann test, a luetic etiology should be strongly suspected.

Of Eichelberg and Pförtner's seventeen cases of epilepsy, five gave a positive Wassermann test in the serum and the cerebro-spinal fluid was negative. These authors hold that complement deviation in epilepsy is independent of syphilis, and could be ascribed to the nature of the disease process *per se*.

In Plaut's monograph of 1909 three cases of epilepsy are reported and in all of them the findings were negative. Of his recent twenty cases only one had a positive Wassermann reaction, and this one presented a history of syphilis. In four only the fluids were examined with negative results, even in the case where the serum was positive.

Kafka examined two cerebro-spinal fluids of epileptics with negative findings, and likewise Zalociecki's six cases gave similar

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results. Of Lippman's nineteen cases, in only one the Wassermann reaction in the serum and blood was positive. In addition to these cases, he examined five other epileptics' sera in which complement deviation was present. In four of them a syphilitic history was satisfactorily demonstrated. In Hübner's nine epileptics the Wassermann reaction was not obtained.

Plaut maintains that the presence of a Wassermann reaction in idiopathic epilepsy should not be regarded as a phenomenon of epilepsy, but a complication of a luetic infection. Whether we are dealing with a syphilitic or non-syphilitic epilepsy will depend upon the entire course and progress of the disease-picture.

It is generally conceded that in epilepsy there is no increase of globulin and no lymphocytosis.

We had twenty-two cases of epileptic psychosis at our disposal; in all of them the diagnosis of epilepsy was unquestionable. In four the serum was positive, and strange as it may seem, a history of syphilis could not be determined. In one case the fluid reacted positively to Wassermann test. In two instances globulin was present, in one of them it was very slight. The number of lymphocytes was very low except in four cases. It may be tabulated as follows:

Number of Cases.	Number of cells per cubic millimeter.
1	6
1	5
1	10
1	15
1	23
1	7
2	4
3	2
6	1
3	0
1	3
1	1
22 cases	

Of these twenty-two cases three presented rather anomalous features from the point of view of serology, cytology, and chemistry. All the three epileptics have had convulsions for years; two since early childhood, and the other since the age of eighteen (present age about 30). They present the usual signs of mental stigmata peculiar to epilepsy; there is no history of syphilis and

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signs of organic brain disease cannot be determined. The laboratory findings in the cases were as follows:

Case I.	Case II.	Case III.
Serum negative.	Serum positive.	Serum negative.
Fluid negative.	Fluid negative.	Fluid negative.
Globulin mild.	Globulin negative.	Globulin negative.
Lymphocytes 15 per cmm.	Lymphocytes 7 per cmm.	Lymphocytes 23 per cmm.

These patients were put on anti-syphilitic treatment (potassii iodidi gr. xv and mercurii chloridi gr. 1/32—three times a day), and five months later another serological, cytological and chemical examination was undertaken and the four tests were absolutely negative. Nevertheless, the patients are subject to convulsions which recur as frequently as formerly. These cases are difficult to interpret; one would naturally think that some error in the laboratory technique had been committed. Had the luetic etiology been responsible for the disease process, convulsions should have disappeared under specific treatment. Such was not the case with our patients.

C. CHRONIC ALCOHOLIC PSYCHOSIS; ARTERIOSCLEROSIS; SENILE PSYCHOSIS; AND TRAUMATIC PSYCHOSIS.

It is generally contended that in chronic alcoholic psychoses, arteriosclerotic insanity, senile dementia, and traumatic psychoses, no abnormal manifestations from the point of view of serology, chemistry, and cytology are demonstrable.

According to Plaut:

	Negative.		Positive.	
	Fluid.	Serum.	Fluid.	Serum.
Chronic Alcoholism	8	10	..	..
Korsakoff Psychosis	3	5	..	..
Alcoholic Delusional Insanity	4	4	..	..
Arteriosclerosis	13	17	..	1
Post-traumatic Psychoses	2	..	..	..
Dementia Senilis	..	1	..	..

Nonne had three cases of pseudo alcoholic tabes; in two, the fluid was positive, and more recently he examined seven cases and in all of them both the fluid and serum revealed no complement deviation.

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Our material contained thirty alcoholic cases, ten of which were of Korsakoff form, and twenty were acute hallucinosis, paranoid form, etc. The first ten cases showed no Wassermann reaction in the blood or fluid; there was no lymphocytosis or increase of globulin. In one case we obtained a history of syphilis. Nevertheless, the laboratory findings were entirely negative. Of the twenty other cases, in fifteen Wassermann reaction was not demonstrated either in the blood or fluid. In five the serum was positive, and only one fluid revealed complement deviation with increase of globulin. In that case particularly, there were no symptoms of paresis, and a history of syphilis was denied. In three cases a history of syphilis was obtained. In none of these cases (except in one as stated) was lymphocytosis or increase of globulin determined.

Fourteen cases of arteriosclerotic insanity and senile psychosis and one traumatic psychosis presented negative laboratory findings; in other words, the four tests were negative.

D. FUNCTIONAL PSYCHOSIS.

Of functional psychosis we had seventeen cases of dementia præcox, eighteen manic-depressive insanity, and four constitutional inferiority. In three cases of dementia præcox there was a positive Wassermann reaction in the blood, and in only two a history of syphilis was elicited. In four cases of manic-depressive insanity, a positive Wassermann test in the blood was found; in only one a history of syphilis was obtained, and the other case was examined a few days prior to an attack of erysipelas. The four cases of constitutional inferiority also gave negative results in the blood and fluid. In none of these cases was an increase of globulin or lymphocytosis in evidence.

CONCLUDING REMARKS.

Before attempting to offer deductive conclusions, it is necessary to recall the fact that, although some give recognition to the specificity of the Wassermann reaction, yet the true biologic significance is not fully known. The nature of the Wassermann test is still *sub judice*. We have only a tentative explanation of the theory of the Wassermann reaction. Indeed, Plaut very conservatively remarks: " (1) The Wassermann reaction for syphilis is a biologic, specific, antigen-antibody reaction; on the one hand

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the antibody has the peculiarity of reacting, not only with syphilitic antigen, but also with normal connective tissue constituents, and on the other hand the antigen is closely related to lipoid substances or is a specific albumen-lipoid combination. (2) The active substances of the syphilitic serum are not antibodies, but are substances which owe their origin to syphilitic infection and possess a chemical affinity for lipoids (toxins). (3) In the Wassermann reaction, specific and non-specific combination processes go hand in hand."

One must remember that Wassermann reaction can be demonstrated as a transitory phenomenon in scarlet fever, malaria, lepra, trypanosoma, tuberculosis, and not infrequently it is also found in normal individuals, and then again this test is not elicited in cases with a history of syphilis. In spite of the fact that every possible effort is made to perfect laboratory technique, nevertheless, errors occur with the very best trained laboratory workers. Since the nature of the biologic process is still unknown, the test can only be regarded as of relative significance and should only be taken in conjunction with other laboratory tests and clinical data.

The following conclusions are submitted:

I. In order to make a complete laboratory report of neurologic or psychiatric validity, it is essential to examine the blood and fluid for complement deviation, and, in addition to this, cytological and chemical tests of the cerebro-spinal fluid should be made. An examination of the blood alone will throw no light on the psychiatric or neurologic diagnosis. It must be also emphasized that in suspicious cases, several examinations of the blood and fluid should be performed.

II. The one hundred cases of general paralysis gave in sixty-three per cent a positive Wassermann in the fluid and blood; seven per cent revealed a positive Wassermann only in the blood; in sixteen per cent the Wassermann reaction was present only in the fluid; in four per cent of the cases, Wassermann test in the blood and fluid was negative.

It will be remembered that the French school maintains that (1) in the incipient stages of general paralysis the Wasserman reaction is present in the blood and not in the fluid; (2) in the fully developed stage both the blood and fluid show complement deviation; and (3) in the last stage of the disease the fluid, but

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not the blood, gives a positive Wassermann test. We have had no experience with incipient cases of general paralysis; forty-nine out of seventy-two cases substantiate the second statement and only seven of twenty-two general paralytics of the last stage confirmed the third statement.

It is important to note that some of our cases gave a negative Wassermann test in the blood, also there are other instances in which the Wassermann test was negative in the fluid, and again there are cases which show a negative Wassermann reaction both in the blood and fluid; and these findings bore no relation to the course and progress of the disease process.

In all our cases, except two, lymphocytosis was demonstrated with varying intensity, but no distinct parallel with the course of the disease could be established. It may be safely stated that in the majority of our cases the four reactions were, as a rule, present. *Beyond a shadow of doubt, the cytological reaction, plus the globulin content, are of profound significance, and are always indicative of an organic process in the central nervous system.*

III. In cerebral syphilis the four reactions are not always elicited. In two cases of cerebral syphilis, which were confirmed by post-mortem examination, the Wassermann reaction was present in the blood, but not in the fluid, and globulin increase and lymphocytosis were manifested. These results confirm Plaut's views of the serological content of the blood and fluid in cerebral syphilis.

In chronic syphilitic endarteritis of a non-active process and apparently healed gummata, the blood gave a complement deviation, the fluid was negative for Wassermann test, globulin was not increased, and the cell-count was very low—only three lymphocytes per cubic millimeter. In other cases, where the syphilitic process was relatively young or active, the results were the same as those obtained by Plaut. However, the writer is reluctant to employ his material for deductive purposes. It is important to call attention to these anomalous features, and only such material could be utilized for deduction as could be supported by autopsy.

Our tabetic material is too small to be commented upon. It is worthy of emphasis that the four reactions were not present in the two cases.

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IV. The alcoholic psychoses present no pathological phenomena in the fluid; however, in some of the cases Wassermann reaction was present in the blood and, indeed, in some instances a history of syphilitic infection was obtained. Likewise arteriosclerotic and senile mental diseases and functional psychoses (such as dementia præcox, manic-depressive insanity, etc.) gave similar results.

V. In epileptic psychoses as a rule neither the blood nor the fluid reveals abnormal constituents. Strange as it may seem, three of the twenty-two cases of epileptic psychoses on the first examination showed some abnormal phenomena in the blood and fluid. Under anti-syphilitic treatment these pathologic manifestations disappeared. It is very difficult to interpret these results inasmuch as the convulsions did not cease or decrease in frequency.

VI. While no examination of an organic mental disease is complete without a full laboratory report, from the standpoint of serology, cytology and chemistry, nevertheless, in the present state of our knowledge, one feels that a clinical laboratory cannot be considered as the ultimate court of appeals for deciding disputed diagnosis of border-line cases. The clinical observations cannot be undermined; the development of disease cannot be ignored; and the progress and course of the clinical phenomena should be carefully considered. The laboratory results can only be utilized together with the clinical data.

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AN INTRODUCTORY HISTOPATHOLOGICAL STUDY OF THE PARAPLEXUS IN THE PSYCHOSES.

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To the choroid plexus has been attributed the important function of generating and secreting the cerebro-spinal fluid. Of recent years, considerable diagnostic value, especially in the psychoses, has been attached to alterations of the constituents, and the pathological findings in this fluid. Yet, *mirabile dictu,* the histopathological changes, which must obviously attend abnormal transformation of this secretion, have been practically overlooked.

Studies were made of fifty-one paraplexuses from individuals suffering with different forms of insanity, viz.: Paresis, 14; cerebral syphilis, 4; senile dementia, 7; arteriosclerosis, 8; epileptic, 2; dementia præcox, 6; acute mania (?), 1; manic depressive, 1; paranoid state, 1; chronic alcoholism, 1; unclassified, 4; imbecility, 2. For comparison, plexuses from two individuals dying in a general hospital, of diseases without mental symptoms, were examined; and plexuses from the rabbit, guinea pig, ox, calf, sheep, hog, cat, and dog were secured. Sections were obtained from plexuses imbedded in paraffin and celloidin. Fresh material was also utilized. The following methods of staining were employed: Toluidin blue, hematoxylin-eosin, Van Gieson's picric acid and acid fuchsin, Sudan III, osmic acid, Levaditi, Weigert's for fibrin, Hexaheimer's, nilblau, cresyl violet, and Mann's modification for vessels.

Anatomical and Histological Considerations.

The velum interpositum, or tela chorioidea superior, requires description, because its fringed, highly vascular border (paraplexus, Fig. 1), composed of a triangular fold of pia extending into the paracele along the rima or gap between the diencephalon and hemicerebrum, cannot be understood except in connection with the velum.

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The pia of the under portion of the developing first brain vesicle, by the downward and backward growth of this segment, is eventually brought in immediate contact with the upper surface of the second brain vesicle. These two lamellæ of pia, a dorsal and a ventral layer, between which exists subarachnoid tissue, constitute the tela choroidea superior, a veil interposed between

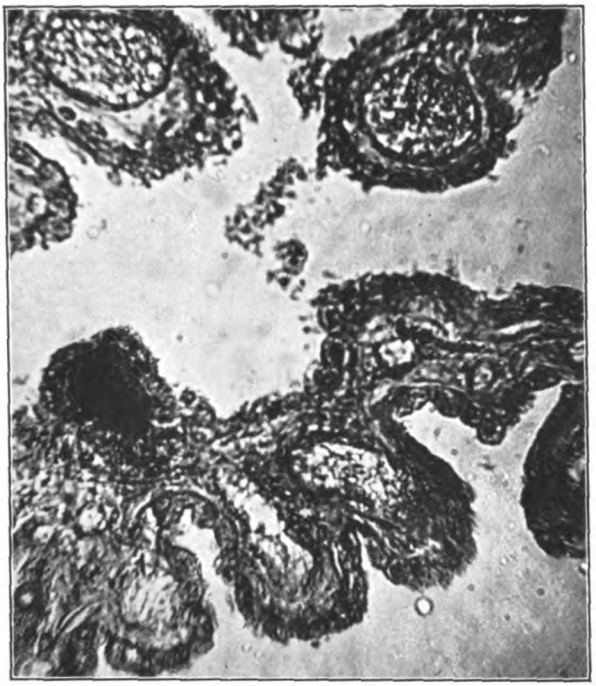

FIG. 1.—Showing general structure of paraplexus.

the prosencephalon and the thalamencephalon. It lies (just) beneath that part of the fornix which can be seen in the bodies of the lateral ventricles, and the splenium of the corpus callosum, its dorsal lamellæ being joined with the ventral surface of these bodies. It is above the optic thalami and corpora quadrigemina, its ventral fold uniting with the optic thalami. It lies over the body of the third ventricle, forming its membranous roof, resting at the sides upon the upper surface of the optic thalami, and extending as far as the oblique grooves on their superior surfaces.

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The dorsal or base of this triangular fold of pia mater is in continuity with the pia mater enclosing the inferior surface of the occipital lobe and the superior surface of the cerebellum. The fold is bifid at its apex, each section ending just dorsal to the anterior pillars of the fornix. In the floor of each lateral ventricle between the tænia semicircularis, which borders the caudate nucleus, and the fimbria which forms the edge of the fornix, is a narrow strip of the parietes of the first encephalic vesicle in which nervous tissue is entirely absent, and as a result the wall of the vesicle, in this area, is composed only of pia and endyma.

The tænia semicircularis and fimbria extend from the cella of the lateral ventricle into its medicornu, and the partition intervening between them in this region is identical in structure with that between them in the body of the ventricle—simply pia and endyma in close contact, the nervous tissue no longer existing, which was at one time present in this narrow space. In those regions where the richly vascular pia covers nervous tissue, many branches from its vessels penetrate into the outer layers of this tissue which forms a supporting structure, but along this lineament, which extends from the tip of the medicornu to the foramen of Monro, the pia is not sustained by such material being in intimate relation to the fragile endyma.

As a consequence, the branches become distended and elongated, impelling the delicate serous membrane entad, the result being an erratic, clumpy mass of vessels enveloped completely by endyma, and intruding into the space originally a part of the ventricular cavity. This vascular structure is called the paraplexus. While the choroid plexus is generally said to intrude into the paracele, this statement is not exact, as the cavity is bounded by the endyma and no infraction is made in this membrane, the true condition being that the wall is turned entad and the capacity of the ventricular cavity correspondingly diminished. All the paraplexuses are explained in a similar manner. The erratic and winding disposition of the arterioles and venules of the choroid plexus has led to its description as an erectile tissue. It apparently does not possess this attribute. The choroid plexuses are separated from the ventricular cavity by an investment of cuboidal cells, which have their origin from, and are in continuity with, the ependyma cells lining the walls of the ventricles. Thus the blood-vessels of the

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plexus lie without and not within the cavity of the cerebral ventricles, since they are separated from the paraceles by the ependyma cells, which form a part of the wall of these cavities from an ontogenetical aspect.

It is interesting to note, that although the choroid plexuses of the cellæ of the lateral ventricles originate from the velum interpositum, the choroid plexuses of the postcornua are derived from the pia covering the cortical parts of the rhinencephalon.

The arcuate fissures through which the invagination of the atrophied parietes of the secondary forebrain is effected, by the richly vascular pial tissue, to form the paraplexuses are called the choroid fissures (fissures of Bichat). The lymphatic channels of the choroid plexuses are undefined. The paraplexuses of the medicornua are supplied with blood by the prechoroid arteries, branches of the internal carotid arteries. The paraplexuses in the vicinity of the splenium are supplied by the postchoroid arteries. The choroid veins return the blood from these plexuses, and at the foramen of Monro unite with the venules of the corpora striata to form the veins of Galen. Nerves have been found entering the plexuses.

It is generally stated that only pial tissue enters into the formation of the choroid plexus, no arachnoidal tissue being present, contrary to what might be expected, since this variety of tissue is found between the layers of the velum.

Some investigators have contended that the soft coverings of the brain are not separate and distinct membranes, but essentially one structure in their entirety, and hence are only to be considered as one membrane. The term pia-arachnoid has been used to designate this structure. After careful histological examinations of the cerebral meninges, I am inclined to believe that the pia mater and arachnoid should be considered as one membrane. If this view be accepted, then arachnoidal tissue may be regarded as entering into the formation of the paraplexus. The pia arachnoid, which is the basis of the choroid plexus, is intimately adherent to the surface of the brain and sends prolongations into all its sulci. Double folds of pial tissue are formed by such introversions into the larger fissures, and in the smaller the invaginated portions are septum-like in character. (In this detail the pia mater is described as differing from the arachnoid which is said to span all

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the sulci, not accompanying the pia, except in the instances of the very largest fissures.) The membrane consists of fibro-elastic tissue, disposed in irregular lamellæ, divisible into an outer and inner layer, and forming a spongy tissue, in the interstices of which more or less fluid may be found. Coarse fibrous bundles compose the outer layer, while the fibers of the inner layer are finer and the lamellæ thin.

The membrane is a typical vascular structure. Numerous lymphatics and blood-vessels intervene between the two layers. The lymphatics of the layers freely communicate, and the larger vessels are loosely disposed between the layers. This fibrous connective tissue membrane, and also the sheaths of its vessels, are covered with a layer of endothelial cells. In the paraplexus numerous spaces, varying in size and shape, result as a consequence of the network arrangement of the fibrous bundles which cross over one another. Although irregularly disposed, these cavities communicate, contain fluid and are lined with endothelial cells. A pyriform enlargement of the plexus is present in a number of instances near the most capacious part of the paracele, at the union of the cella with the postcornu, and which is called the glomus. In this enlarged region the spaces referred to are greater in size than in the denser portions of the plexus, in which minute channels can be discerned lying between loose areolar tissue.

Many highly vascular finger-like processes, varying greatly in size, project from the surface of the plexus. The larger villi are extensively subdivided into numerous branches, and the villi are supplied with arterioles which enter a capillary plexus. Minute venules collect the blood from these plexuses. Capillary loops can be observed in most of the smaller villi.

Epithelium composed of a single layer of cells entirely covers the free surfaces of the villi, although Luschka has referred to it as formed of several layers of cells, and resembling compound or stratified epithelium.

It is, however, readily perceived upon histological examination of a sufficient number of choroid glands, that there is but a single stratum of cells, except in those instances in which proliferation has occurred, either of a pathological or compensatory character.

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The cells of the choroid glands of embryos and young animals may be distinguished from those of the adult, being ciliated, more columnar in type, more difficult to stain and with their nuclei placed near the apex of the cell.

Even in normal condition, the choroidal cells are not uniform in size. They are mostly of an irregularly rounded contour, but cuboidal, polygonal and triangular types are occasionally encountered. Their nuclei are spherical or oval and contain nucleoli. The chromatin seems to be collected into minute aggregations. A fine reticular structure (spongioplasm) is seen within the protoplasm of the cell, and knots are formed between the meshes, giving the cells a granular appearance.

A large round mass is generally present in the cytoplasm, usually about half the size of the nucleus, but occasionally of almost the same dimensions. It is probably a lipoid substance contained within a vacuole. The cells of this epithelial membrane are maintained in proper juxtaposition, one to another, by delicate intercellular cement substance. Fine protoplasmic threads are sometimes seen bridging across the intercellular substance, or uniting between adjoining cells. The uniform connective tissue, which is normally quite sparse in the villous projections, forms a basement membrane for the epithelial covering. It contains a few oval, spindle and ramifying cells, and beneath the bases of the epithelial cells in the sub-epithelial layer, peculiar flattened cells may be seen, which send processes between the cells, producing basket-like depressions, in which the bases of the cells are contained. They can be recognized by their flattened chromatophilic nuclei and thin cytoplasmic cell bodies. The function of these cells is, probably, structural in character.

The concensus of opinion is that the paraplexus is an actively secreting gland, its function being to secrete the cerebro-spinal fluid, which differs in composition from the lymph and from the fluid discharged in serous exudations. According to Meek, the droplets, which are normally present in the choroidal cells, become larger in size as they advance toward the apical extremities of the cells, and they seem to be expelled without destruction of the cells from which they are discharged. It has been thought by some that dissolution of the cells occurs upon extrusion of these droplets. The gland is presumably a ductless organ.

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Histopathological Considerations.

Hyaline nodules are a frequent pathological finding and appear as minute dark granules staining purplish with hematoxylin, but quite differently with other stains. It can be easily demonstrated that calcium salts are commonly a constituent of these bodies, especially in senility, and that fatty degeneration occurred previous to calcification. Calcareous infiltration (Fig. 2) can be recognized by the grating sound produced upon division of the

Fig. 2.—Calcareous infiltration of the paraplexus (senile dementia).

choroid gland. The hyaline concentric bodies met with in the choroid plexus are apparently identical in origin and nature with those found in the dura and pia arachnoid. They are invariably abundant in the insane, occurring in 60 per cent of the fifty-one plexuses examined. These bodies are most frequently round but are occasionally irregularly shaped or elongated. The greater number present concentric rings varying in distinctness and number. Virchow states that these concentric bodies are formed by a deposition from the tissue fluids.

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After examining a number of these bodies it seems more than likely that some of them result from an extensive hyaline degeneration of capillary walls, the lumina of which are subsequently obliterated by a multiplication of the endothelial cells of the intima as shown in Fig. 3. Perivascular hyaline degeneration is often an accompaniment.

They may arise in consequence of a proliferation and hyaline degeneration of the endothelial cells lying within the interwoven

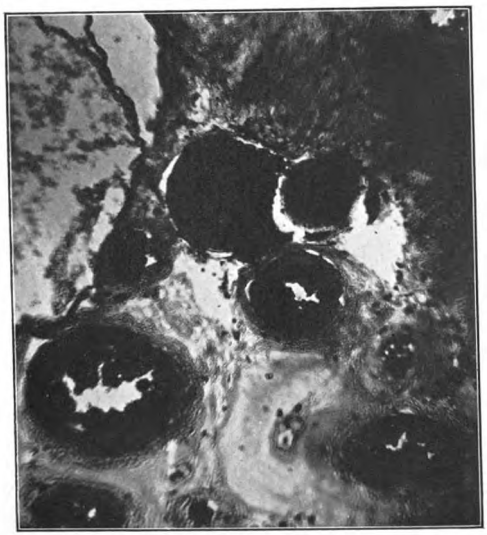

FIG. 3.—Hyaline spherules of the paraplexus in different stages of formation (arteriosclerotic dementia).

connective tissue supporting the frame-work of the plexus, since cellular hyaline degeneration is probably limited to mesodermic cells. The endothelial cells become swollen and no longer react to nuclear stains, and are ultimately converted into a hyaline spheroid of a homogeneous appearance, staining poorly. Cells may form small individual concentric whorls (Fig. 4) or attain relatively large dimensions, or coalition of several may supervene. The concentric rings are apparently a final stage in the process, due to contraction. They are subsequently surrounded by a

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fibrous capsule, a matter of no special significance, as this is the usual reaction of the body in respect to all foreign matter. The fibers of hyperplastic connective tissue may become so closely packed together that the mass may assume a homogeneous hyaline character (Fig. 4), or by a general fibrous change be converted into a pale solid body of a cylindrical shape, with a finely granular surface. It seems likely that this hyaline substance results from a proteid modification *in loco,* by an interference with the function

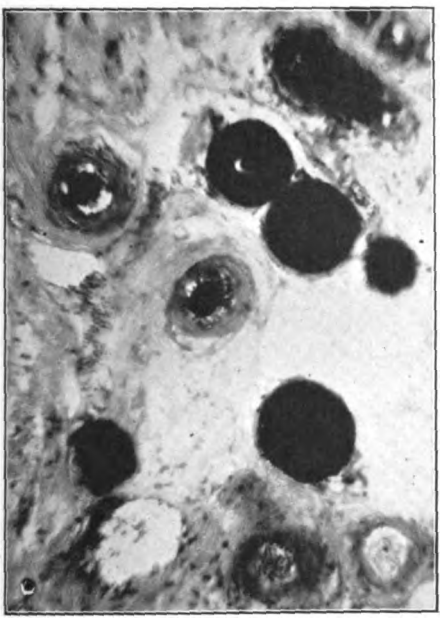

FIG. 4.—Concentric whorls and homogeneous types of hyaline bodies of the paraplexus (paresis).

of the cells, or a deposition of insoluble material. How this transformation takes place cannot as yet be definitely explained. It is improbable that an analogy exists between its origin and the coagulation of proteids by heat. Proteid precipitates by salts and metals, are obviously different, and their insolubility in water not stable. It may be converted into other albuminoid substances, and may undergo caseous degeneration. This caseous variety of degeneration was present in three of our cases. Pigmentary degeneration was observed in senile cases. Retrogressive fatty

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changes undoubtedly precede calcification, as is proven when stained with Sudan III or osmic acid. These hyaline formations display a typical affinity for acid anilin-stains, although a reaction to basic stains also occurs. With Van Gieson's acid fuchsin and picric acid mixture, the concentric whorls are frequently stained a bright red color. They may also take fibrin stains. Toluidin blue gives to these bodies a beautiful sapphire blue, and they appear of a violet tinge when stained with cresyl-violet. The reaction to stains of hyaline nodules is very uncertain, and they at times resemble amyloid material. Cholestrin is not infrequently found in senility, but typical cholestrin plates are rarely in evidence. They are of a faint yellowish color and irregular in form.

Among the great variety of tumors which occur in the paraplexuses, cysts are manifestly the most common. In the choroid glands of the insane they are most frequent, being found in 65 per

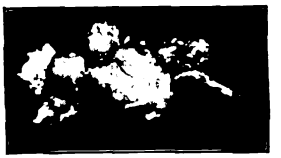

FIG. 5.—Mulberry-like appearance of the paraplexus.

cent of the cases under consideration. They may be single or multiple and are often more numerous on one side of the brain. In some instances they are so abundant that the greater part of the plexus is transformed into a mulberry-like mass (Fig. 5). They may be extremely small or attain a diameter of 10 mm. Many tiny vessels can be discerned traversing the surfaces, or imbedded in the walls of the cysts. The surfaces also present a fine granular aspect, the granules probably representing minute hyaline bodies. The surfaces of the cysts may be only partly covered with epithelium. In the smaller ones it occasionally remains unbroken, but the cells are flattened and their cytoplasm prolonged, simulating at times fibroblasts. The epithelium may only be present at the bases of the larger cysts, or a few patches of elongated cells scattered irregularly over their surfaces. These rod-like cells with the extremities of their protoplasm in apposition present a string-like appearance. Gaps in the continuity of these

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strings of cells can be seen at the summit of the larger cysts, dissolution having occurred. These threads of transformed cells are rarely closely applied to the surfaces of the cysts, but in many cases a considerable space exists between them and the surfaces. It is quite evident that some of them become entirely detached and enter the fluid of the ventricles. The majority of the larger cysts are multilocular in character (Fig. 6), being divided into a

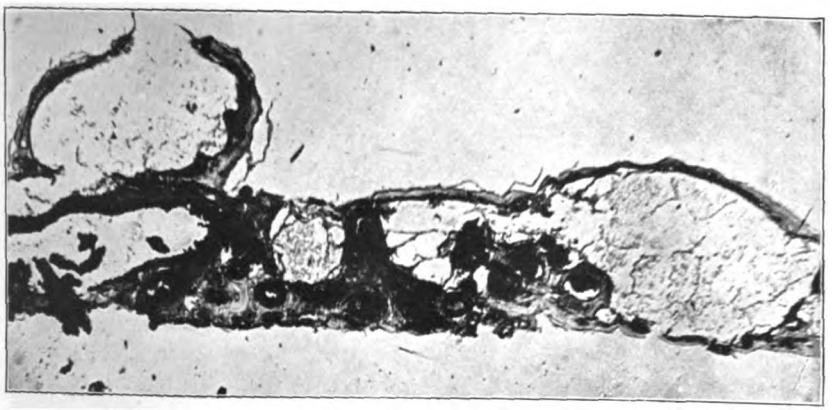

FIG. 6.—Cystic condition of choroid plexus, showing structure of cysts (senile dementia).

number of compartments by delicate trabecular processes of connective tissue, which are lined by endothelial cells in various stages of degeneration, some being altered in appearance almost beyond recognition. A similarity existing between the degeneration of the endothelial cells in cystic formation and in the evolution of hyaline concentric whorls is sometimes evident. These translucent sacks are filled with a clear slightly yellowish liquid, or a celloid-like viscid mass. The contents of these cysts were examined in several instances, and found to contain cells, usually somewhat altered. In the fluid of some of the cysts, only degenerated endothelial cells could be found, while in the contents of others blood discs, lymphocytes, large mononuclear cells with twisted nuclei, endothelial elements, and remnants of broken-down cellular tissue were present. Concentric whorls are often seen within the cyst, most frequently near the base and contingent to its wall,

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but were also observed in the center of the cyst, attached to the connective tissue trabecular processes. The origin of these cysts has not been conclusively determined. Adhesions at the edges of fissures, with persistence of secretory activity, may give rise to retention cysts. Hyaline homogeneous formations and concentric whorls seem to co-exist with cystic conditions of the plexus. They are seen in the vicinity of the blood-vessels, and sometimes seemingly attached to their walls and exerting pressure upon the vascular structure (Fig. 7). That they tend to compress lymph

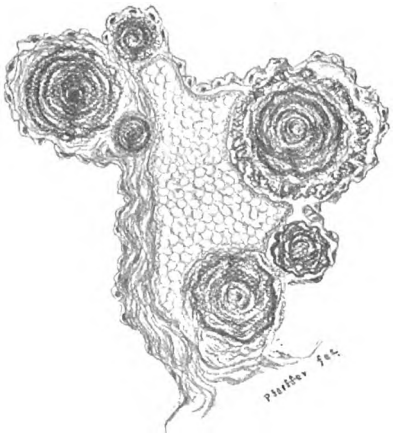

FIG. 7.—Compression of vessel of paraplexus by concentric whorls.

channels, and in consequence check the flow of lymph, producing an obstructive edema, seems to be quite an acceptable conclusion. The spaces through which the circulation of lymph is maintained in the choroid plexus may, after the same manner, become occluded by a proliferation of the cells, entirely filling up these spaces. Such impediments form barriers against which the lymph is forced.

Progressive proliferation and hyperplasia of the surrounding tissue occasionally causes the cyst to become practically isolated from the neighboring parts. The interstitial hyaline degeneration, which is encountered affecting the vessels and connective tissue

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of the choroid plexus, is one of the most interesting and pertinent conditions to be considered. The adventitial coats of the smaller arteries are more particularly involved. The connective tissue fibrillæ disappear as such, and are transformed into an homogeneous translucent mass in which few of the typical attenuated nuclei can be detected. Whether the vanishing of the fibrillæ results from a swelling and fusion of the individual fibrils, or from a deposit between them of material having the same refractive index, cannot be conclusively stated. Whichever way produced, there is, without doubt, an increase in volume, as the interstitial tissue becomes broader than normal. The capillaries in connection with the small arteries present the most pronounced hyaline degenerative conditions. Although the outer coat may be affected alone, or the inner and middle coats together, quite frequently all three coats are attacked. The walls of the capillaries may become converted into thickened hyaline tubes, or the whole capillary converted into a solid homogeneous hyaline mass. Hyaline degeneration of the outer coat consists in a thickening of the longitudinally disposed fibers. The enlargement may be inconsiderable or great and is not granular. It not uncommonly becomes two or three times the breadth of the normal adventitia. The intima seldom attains the thickness of the adventitia when undergoing hyaline changes. It often presents an undulated aspect, and its convolutions extend into the media, which is in a more or less degenerated state due to an interference with its nutritional mechanism, as a result of the swelling of the intima. The degeneration of the muscular coats ends in a granular formation. Small dilatations and saccules are often encountered in connection with the arterioles, which appear to be associated with the hyaline degeneration in the vessel walls. These spindle-shaped dilatations may become abundant, terminating by the production of miliary aneurisms. "Hyaline thrombi" may be met with in such vessels. Formation of new vessels was observed most often in paresis. A duplication of the elastica occasionally occurred, and in many cases aneurismal dilatations. The elastica in the endarteritic vessels was unusually wavy. A similar duplication or hypertrophy of the elastica can be demonstrated in cerebral syphilitic endarteritis.

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The choroidal cells of the paraplexus present some interesting features. Among the fifty-one plexuses examined from the insane, complex epithelial formations were in only one instance demonstrable in the plexuses obtained from cases of functional psychoses, but were to a greater or less extent evident in all the choroid glands from other forms of insanity. In paresis many of them were enormously enlarged, swollen and contained spherical or irregularly shaped masses of lipoid material, in some instances almost entirely filling the cells, and degenerative changes were pronounced (Fig. 8). In close proximity to the nuclei were

Fig. 8.—Cells undergoing degeneration and presenting a stratified aspect (paresis). Some are filled with lipoid material.

clumps of granules, reacting differently than the lipoid substances to stains. Changes of a similar nature, but to a less extent, were evident in the cells in senile dementia.

Ring-like formations, apparently overlapping one another, appeared along the free borders of some of the cells in paresis (Fig. 9). These cells in no instance contained droplets, nor were lipoid substances discernible. Degenerative changes were perceptible in a few of these cells.

The transformation of cells into several large vacuoles, with flattened and deformed nuclei occupying positions near the periphery of the cells, thus simulating *Körnchenzellen* in appearance

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(Fig. 10), were more frequently observed in marantic forms of insanity, in which cytological degenerative processes are pronounced. The intercellular substance, between those cells

FIG. 9.—Cells with "ring-like" formations along their free borders (paresis).

which are deteriorated, has disappeared, and relatively wide intervals can be perceived between the cells. Branching of the nuclei of connective tissue cells was an interesting feature in cases of dementia paralytica. Mast cells were found in 80 per cent of

FIG. 10.—Vacuolization of cells, simulating Körnchenzellen in appearance (chronic alcoholism).

the cases, but were especially numerous in senile dementia, arteriosclerotic dementia, paresis and cerebral syphilis. A few plasma cells were observed in all of the plexuses of paralytic dementia.

In conclusion, I wish to express my thanks to Dr. William A. White for permission to engage in this research, and to Dr. G. R. Lafora for many valuable practical suggestions.

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HOW LONG HAS PELLAGRA EXISTED IN SOUTH CAROLINA?*

A Study of Local Medical History.

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Introduction.—This is a presentation of recorded facts, so far as they are available. Records bearing on the subject, however, are few and isolated, and where they are wanting or connecting-links are entirely missing, for collateral evidence recourse has been had to recollections and traditions, and finally even to judgments and inferences—confessedly not reliable guides either in medicine or in history.

My chief sources of information, however, have been the written records in the case-books of the South Carolina Hospital for the Insane, and the printed annual reports of its physicians. Contrary to expectation the most important and striking clinical memoranda discovered belong notably to the earliest or ante-bellum period of the history of the asylum. Unfortunately, these data are for the most part very brief, and many lacunæ exist, thus necessitating the introduction of a number of separate details to produce a composite picture.

In carrying on my investigations I have conferred both with officials who have long had charge of our patients and with general practitioners. When inferences have been used, I have consulted pellagrologists of presumably unprejudiced mind, and have included their valued opinions.

Certain parallels in the history of pellagra, in this and other countries, have been drawn, and experiences in adjoining states have been cited where they have a bearing upon local conditions.

In reaching conclusions it has been necessary to reject former diagnoses of my own as well as to suggest revision of those of other physicians, including my distinguished predecessors. But, so far

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as possible, the study is impersonal and has been made in the interest of truth, and its spirit is that of confession and explanation rather than of adverse criticism or reprehension.

History.—In our State Hospital, pellagra was first recognized, in ignorance of any previous observation of the disease in the United States, by members of the medical staff about December 1, 1907. A statement of these observations was made at once, orally to officers of the State Board of Health, and on December 30, 1907, a preliminary report was presented, which was published in the 28th annual report of that Board for 1907. Our report was also printed soon afterwards in the *Journal of the South Carolina Medical Association* (Greenville, 1908, IV, 64-76), and in the AMERICAN JOURNAL OF INSANITY (Baltimore, 1908, LXIV, 703-725). Some comment was made upon it by the newspapers, one of the first being the *Charleston News and Courier* of January 14, 1908. Such dissemination of the subject at last attracted attention. For in the following spring and summer, although not a little skepticism prevailed as to the actual existence of pellagra in our state and elsewhere in the country, and although it was the object of considerable ridicule, yet a number of cases of the disease were recognized and reported in South Carolina, as well as in other states. The disease was identified with Italian pellagra in the summer of 1908 by two South Carolina physicians.

On October 29, 1908, our State Board of Health held a well-attended conference on pellagra in Columbia, and on November 3 and 4, 1909, under the auspices of the same Board, there was held a National Pellagra Conference in the same place. The transactions of this meeting proved to be a distinct addition to the literature of the subject. Since then annually in November a pellagra clinic has been conducted in Columbia by the State Board of Health. These meetings have served to stimulate more than local interest.

Naturally, among the many questions about the disease, upon which all would like definite information—at least historically and statistically—are: How prevalent is pellagra? and How long has it existed in South Carolina?

In the preliminary report of 1907, nine cases of supposed pellagra, both remote and recent, were described. At the meeting in 1908, Dr. C. F. Williams, the state health officer, announced that he had received 269 replies to 942 inquiries sent to physicians in the

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state, reporting 187 cases of the disease. In 1909, after a careful investigation, Dr. Williams estimated that there were 500 cases of pellagra in South Carolina. The report of the Board of Health for 1910 stated that between 500 and 800 cases of the disease had occurred in the state during the year.

In 1911, Dr. J. A. Hayne, the present state health officer, in response to 1200 inquiries, received replies from 250 physicians, placing the total number of pellagrins in the state at about 2100, of whom 1000 were under treatment.

A very brief summary of pellagra statistics by admissions to our hospital is: 1907, 4 cases; 1908, 42 cases, or 7 per cent of total admissions; 1909, 92 cases, or 15 per cent of admissions; 1910, 135 cases, or 20 per cent, and in 1911, up to November 1, 162 cases, or 27.7 per cent of admissions.

These statistics apply to newly admitted cases. In addition to these, cases of pellagra have seemingly developed in patients long resident. While some skepticism about the existence of such a disease as pellagra still persists in South Carolina and elsewhere in the United States, its presence is now quite generally admitted in 36 states besides our own.

Such statistics as those cited above raise the perennial question: Are we dealing with a new disease in epidemic form, or have we an increasing number of cases of a disease long endemic?

With slowly accumulated information, many physicians in South Carolina can now establish on retrospection the presence of pellagra in their practice, at least a decade before it was first reported, although the right diagnosis had not been made. We know, however, that Dr. H. E. McConnell, of Chester, S. C., did make the correct diagnosis in 1903. What evidence have we of its previous occurrence?

Under date of October 23, 1909, Acting Assistant Surgeon Sams, of the U. S. P. H. & M.-H. Service, reported from Charleston in the *Public Health Reports,* that " Pellagra, as such, has but recently been recognized in this city, the first case having come under treatment in March, 1908. There is a very general impression among the local physicians that pellagra has existed in the city for probably twenty years or more, and been incorrectly diagnosed as ' eczema,' ' dysentery,' ' intestinal tuberculosis,' etc., with dementia as a complication, or the reverse."

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Besides the names erroneously applied to pellagra as quoted above by Dr. Sams, I may add several others: "syphilis," "malaria," "acute delirium," "hookworms," "dermatitis exfoliativa," "tuberculosis of the skin," "liver spots," "scurvy," "neurasthenia," "meningitis," "nurses' sore mouth," "sprue," "meningo-encephalitis," "neuritis," etc.

In answer to the question: If pellagra has existed in this country for years, why has it not been recognized? I beg to present two quotations:

In Spitzka's Treatise on Insanity (New York, 1883, pp. 124-125), it is stated that "*Pellagrous insanity* will not be discussed in this volume as it does not occur in America, and it is limited to such countries as Italy, where maize forms a staple article of diet, and where the disease known as *pellagra,* which is attributed to the living on spoiled maize, occurs in an endemic form."

Osler says in his Practice of Medicine (6th edition, 1906, p. 384), "Pellagra . . . . occurs extensively in parts of Italy, in the south of France, and in Spain. It has not been observed in the United States."

It is not necessary to cite at this time other equally reliable writers to the same effect. The authorities said that pellagra did not exist in this country; therefore it was not looked for or, if suspected, a tentative diagnosis was given up out of respect to "authority." A. van Harlingen, the Philadelphia dermatologist, had stated, however, in 1882 that the disease was likely to appear in this country at any time.

The unpreparedness of the American medical mind to recognize pellagra, may best be illustrated by my citing again the fact that several years ago, one of the highest authorities on diagnosis in the United States, while visiting in South Carolina, rendered the opinion that a case now recognized as pellagra, was suffering from "glossitis." The recalling of such opinions may not be flattering to one's diagnostic acumen, but it was the custom in Europe also for more than a century for pellagra to be misinterpreted and misnamed.

We may, with advantage, recall what is said by Babes and Sion upon this subject: "It is probable that pellagra appeared in Europe long before its scientific description. It was, however, classed with other different forms of disease, probably with various

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skin diseases, with diseases in general, especially with chronic intestinal and nervous diseases, as well as with mental diseases: especially would a disease with the very changeable symptoms of pellagra be considered as a manifestation of leprosy and scurvy."

So thorough and competent a student of the literature of pellagra as Sambon has this to say relative to the slowness with which the disease has always been recognized. "An important reason why pellagra was not described sooner, is that it was confounded with other diseases, such as eczema, leprosy, erysipelas, and scurvy. Pujati, who first established the presence of pellagra in Venetian territory where scurvy was common, named it "Alpine Scurvy." Odoardi retains this name because, he says, the two diseases have a common cause, produce like effects, and are cured by the same remedies. Sartogo (1791) called it "Mountain Scurvy," and Aldalli (1791) "Scorbutic Paralysis." Other writers referred to by Sambon have noted the resemblance of and alliance between scurvy and pellagra. It is important to bear this in mind in connection with clinical reports and opinions brought out further on in this paper.

The variety of names by which pellagra was called in Spain and Italy and France, is paralleled in the New World. For years before its final recognition in our hospital, the colored female attendants used to speak of it among themselves as the "rough skin" disease —a repetition of the *pelle agra* of the Italian vulgate. Its supposed relationship with scurvy when it was called "Alpine Scurvy" around Venice, is duplicated by the recorded opinions of early and recent physicians in our hospital, as I shall show later.

At the pellagra clinic held in 1910, a physician much interested in the disease asked me to look up the records of a colored woman whom he had sent to the hospital some years previously, as he was now satisfied she had pellagra. This is what I found:

Hospital Case No. 8990. B. B., colored woman. Admitted Aug. 16, 1899. Age 36 years. Married. Native and resident of Marlboro County. First attack. Duration three weeks before admission. Menses irregular. Physicians' certificate: "Patient has attacks of an hysterical nature and depression over pigmented condition of skin." Examination on admission: "Of stupid appearance. Pupils normal; tongue clean and dry; straight; speech incoherent; nutrition fair. Heart and lungs normal. Some cough. Temperature 98.4 degrees F. Pulse 98. Respiration 14. Weight 98 pounds. Sleep disturbed. Skin of hands black and peeling off. Patient

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has a chronic diarrhea. No fever generally. Converses sensibly and is anxious to get well and go home." Patient failed steadily, and after a hospital residence of three and a half months, died. Assigned cause of death: "Intestinal tuberculosis." On November 5, 1910, an attendant employed in our hospital since 1897, who remembers the case, as it was one of the first of the kind she saw, recalls these facts about her: "The patient had a rough, thick, scaly, dark-colored rash on the backs of her hands. The inflammation was also around her mouth and upon the forehead. The feet were black and scaly. Her diarrhea was very bad. Before she died, she became rigid and had spasms."

That this was a case of unrecognized pellagra there can now be no doubt.

Following up this suggestion, I have gone through the hospital case-books of the last decade and have found notes also made by Dr. Sarah Campbell Allan on other patients that clearly indicate the presence from time to time of several forms of pellagra as we know it to-day. With your indulgence I will cite some of the most noteworthy:

No. 9081. C. S., colored woman. Resident of Beaufort County. Admitted October 22, 1899. "The patient seems quite feeble; has diarrhea, sore mouth, and appears to have been salivated; cervical glands enlarged, irritating vaginal discharge, excoriating the parts. Probably specific." The patient died November 9, 1899, the assigned cause of death being cerebral syphilis.

No. 9277. M. S. Colored girl from Spartanburg, aged 15 years. Admitted April 17, 1900, and died the following October. Became bed-ridden and, for some time before death, "had a bullous eruption all over the body of the nature of pemphigus. Assigned cause of death 'general tuberculosis.'"

No. 9576. F. E. White woman, aged 33 years. Married. Admitted December 2, 1900. Died of "general tuberculosis" after a hospital residence of one year and eleven months. It is noted that the "patient's health has been poor for the whole time of her stay. She had several carbuncles all over the body for months, and was treated with difficulty. Had frequent attacks of diarrhea and eczema of feet and legs, from dew poison, and was emaciated for months."

No. 10208. N. C. White woman. Single. 25 years old. Admitted April 28, 1902. The patient is described as "profane, suspicious, suicidal. In July she is recorded as not doing well. Hands dry and brown. Apprehensive. Was given thyroid extract, gr. v, t. i. d. November 24, losing ground. Bed-ridden, depressed and apprehensive, refused nourishment and became emaciated. Death followed a series of muscular spasms. Diagnosis: Meningo-encephalitis."

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No. 10224. M. A. R. White woman. Single. Aged 59 years. Admitted May 1, 1902. Described as melancholy. Fears that she will kill her children and threatens to get into the well. On admission was restless and noisy at night. In May, 1904, she is reported as having eczema of the hands and having failed in health for several months, died from intestinal tuberculosis.

No. 11860. E. F. M. White woman. Married. Aged 45 years. Resident of Barnwell. Admitted June 20, 1905, suffering from acute melancholia. This patient was ill upon admission, with bowels badly deranged and a greenish vaginal discharge. Her bowels continued troublesome. Had constant cough, eczema on hands, which also did not respond to treatment. Grew steadily worse, and died November 9, 1905, from general tuberculosis.

These meager records have been carefully transcribed, but they have also been supplemented by the memories and revised opinions of the physicians and nurses who attended the patients, and it may be affirmed that all these cases represent some form of what is now called pellagra. The co-existence and diagnosis, however, of other diseases, notably tuberculosis and possibly syphilis, are not denied.

Of interest here is the comment of Lombroso that "In Trieste are found a number of cases of albuminuria and of phthisis associated with pellagra. One can thus understand how the older Italian physicians confounded pellagra with phthisis."

It will be recalled, as part of the recorded history of the subject, that Dr. Sandwith, of London, having rediscovered pellagra in Egypt in 1893, has written that towards the end of the last century, suspecting that it existed in our Southern States, he corresponded with medical authorities and local physicians in this country, but failed to establish his theory through the denial by his correspondents of its existence here.

I am, myself, now satisfied that pellagra has been in our institution for twenty years. Dr. J. L. Thompson, assistant physician, is of the same opinion regarding its presence since 1882.

Miss Irwin, now supervisor in the white women's department, who entered the service in 1884, is able to recall cases of pellagra among the white women almost from the date of her entrance; while a colored male attendant, J. R. Singleton, carries the memory of it back to about the same period among the colored men.

Dr. H. N. Sloan, of Ninety Six, S. C., asserts that pellagra was diagnosed as such in the early 70's in our asylum while he was assistant physician, but no written or printed record of the name has been found.

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Dr. D. S. Pope, of Columbia, says that at least two cases of pellagra occurred in the South Carolina Penitentiary in the middle 80's. In making his diagnosis of these cases, he considered pellagra as a possibility, but ruled it out because the authorities said it did not occur in the United States.

In May, 1908, after studying, in one morning, eight or ten cases of pellagra in Chester, with Dr. H. E. McConnell, we visited Dr. A. F. Anderson, then over 90 years of age, but unusually clear mentally. Dr. Anderson had had a very extensive practice in Chester County for upwards of 60 years. He was also surgeon of the 6th South Carolina Regiment during the war. We described to him the cases we had just seen. He was much interested, but declared, greatly to our disappointment, that he could not recall ever having seen the clinical picture we described.

As evidence corroborative of recollections in South Carolina, I may state that the older physicians at the Georgia State Sanitarium at Milledgeville, think that pellagra has existed there probably for about twenty-five years; and those at the asylums at Raleigh and Goldsboro, N. C., for ten years prior to 1909, when inquiry was made. Dr. I. M. Taylor, of Morganton, N. C., places the probable occurrence of pellagra in the State Hospital there at 22 years prior to the same date. Drs. Wood and Bellamy, of Wilmington, N. C., have traced a case of pellagra in that state to 1889.

The earliest published accounts of pellagra in the United States, yet reported, were observed in asylums at Utica, N. Y., and Somerville, Mass., in 1863-64; also it is claimed that both pellagra and hookworms prevailed at the Andersonville, Ga., prison in 1864.

Of course, if pellagra has existed in South Carolina all these years, some cases of it, as now, must have been committed to our hospital, and *vice versa,* its occurrence in the asylum would indicate its presence in the state at large.

Furthermore, if pellagra has been present in the state and in the asylum, the deaths of patients suffering from it must have been recorded under other diagnoses, because of our ignorance of the condition. What then do the mortality tables of the annual reports show that may now be regarded as probable pellagra?

Following these reports backwards, I find, in the report for 1904, a case recorded under the diagnosis of dermatitis exfoliativa, for which diagnosis I am responsible. I remember the case

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well, for it puzzled me greatly, and I made a strong appeal to the authorities, both of general practice and dermatology, for help. When the time came to sign the death certificate, the diagnosis recorded above was the best I was able to render. Of course, I know now that the poor woman, whose epidermis peeled off and whose hands and feet became gangrenous, died of pellagra of the so-called "wet" type.

In passing, I recall another case now known to be pellagra, in a colored woman at about the same time, which I diagnosed and treated as "scurvy." She is still living and has had only one relapse—last year—in the seven or eight subsequent years.

During my term of service since 1891, the most common diagnoses that I find as applied to fatal cases of probable pellagra, are: "intestinal tuberculosis," when the diarrhea was most pronounced; "general paralysis" and "meningo-encephalitis" for the cerebral and spinal cases; "syphilis," when the skin lesions were marked; and "acute delirium" for the fulminating mental type.

In the mortality tables of the earlier annual reports, I find from 1890 to 1878, "consumption" and "exhaustion" are the most commonly assigned causes of death, but besides these, "inanition," "marasmus," "anasarca," "dysentery," "ascites," and "gangrene" are frequent. Chronic dysentery and chronic diarrhea, which play so large a part in the earlier mortality lists, are comparatively rarely mentioned. To cite a case of this period, we may take that of: Miss E. L. White woman. Admitted from Charleston County, May 30, 1887. Died May 11, 1891, from "inanition." Previous history: "For about three years, this lady has been having hemorrhages from the uterus. For the last three months, these have been checked and the periods normal. She is restless by day, but sleeps well at night. Her mental derangement is increasing and she believes that she has a number of suitors, but her sister prevents her seeing them. Dr. X. [a famous specialist of New York], whose patient she has been, considers her a case of 'cerebral anemia' with prognosis bad."

The patient is described as a decided blonde, cross and irritable, with a mania for eating corn starch. She would quarrel with her nurse until she went to the laundry and got starch for her. She became emaciated and died from obstinate diarrhea. As pellagra is now understood, she no doubt had that disease, associated with

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amylophagia. It will be recalled that Dr. C. C. Bass, of New Orleans, has recently directed attention to this association.

For some years previous to 1876, I find records of many cases of chronic diarrhea and dysentery, as well as one each of pemphigus and gangrene. In 1875, Dr. Ensor, the superintendent, assigns the death of four patients to "chronic diarrhea, resulting from organic disease in the great nerve centers," and in 1873, "six (deaths) from chronic diarrhea, resulting from disease of the brain." But we must not forget that chronic intestinal disorders have long been recognized as the bane of charitable institutions in this country and abroad. Therefore, the occurrence of these conditions does not necessarily denote the certain existence of pellagra. These notes are important chiefly in connection with present conditions and earlier records.

In 1864, Dr. Parker states that most of the causes of death were the result of long-continued mental and physical disease, including convulsions, chronic diarrhea, consumption and dropsy. In 1859, Dr. Parker states that the most prolific cause of death was the result of long-standing chronic diarrhea. In the case-books I find a note of purpura recorded as lasting over a year.

From the printed annual report of 1850, I take this extract, written by the superintendent, Dr. D. H. Trezevant, one of the most distinguished physicians ever connected with the institution, which he had served from its opening in 1828:

"In every institution many patients are admitted with shattered constitutions, whose vital powers are exhausted, and the recuperative energies of the system entirely destroyed. Such is usually the termination of those who become imbecile, either from neglect or mismanagement, in the earlier period of the attack; their brain and nervous system give way, and they die from bowel-complaint, dropsy, and the effect of exhausted powers.

"Many have been admitted this year with so feeble a circulation that their limbs and bodies have become purple, and after the closest and most sedulous attention, ulcerations would occur, and they died from the effects of the long-continued irritation. Many of those who have been some time with us have perished from anasarca, diarrhea, and epilepsy. We have now two in the institution threatened with purpura hemorrhagica, and as they are idiotic, they will most certainly die. It is very difficult for a lunatic to rally if once his bodily health becomes injured, and he suffers from the prostration consequent upon excessive discharge of the mucous surfaces. Diseases of the abdominal and thoracic viscera kill above one-half of our patients."

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To get an unbiased opinion, I submitted this quotation to Dr. F. M. Sandwith, of London, who not only knows pellagra when he sees it, but also when he reads imperfect descriptions of it. This is what he has written me:

"The report of your predecessor is interesting and, of course, it may betoken pellagra, but I think it just as likely to have been the effect of scurvy. Sixty years ago, medical terms were not used with the precision that they have now-a-days."

The latter comment is, however, beautifully illustrated all through this investigation.

Dr. C. H. Lavinder, of the Marine-Hospital Service, has written from Savannah, Ga.:

"That typewritten copy from an old asylum report was of great interest. It looks very much like pellagra to me. That is, it seems to me as if they were having at least a few cases of pellagra."

A careful analysis of the statement of Dr. Trezevant, taken in connection with what precedes and follows, makes me believe that he had before him the clinical picture, obscure in its outlines, it may be, but still the picture of pellagra when he wrote the above paragraphs. No doubt, scurvy was a distinct entity to him and he would have recognized it. Pellagra was probably unknown to him as it was to most of his successors even to our day. Furthermore, cases of scurvy were not likely to occur among an agricultural people in the general population in ante-bellum days, and even if it did, to go unrecognized.

In looking up the clinical records of Dr. Trezevant's superintendency, I have found frequent references to cases of diarrhea or dysentery and exhaustion. But the proportion bears no relation or comparison with pellagra as we now have it in our statistics. Dr. Trezevant had seen practically all the cases under treatment for the 22 years prior to the report of 1850, first as regent (manager) and from 1836 as physician.

It has been impossible to go over, with care, all the case-books. In the period before 1850 there are brief notes by Dr. Trezevant upon cases of probable pellagra, but it will save time and space to reproduce at length a minutely recorded case, especially as it belongs to our very early history. The case is recorded in the

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writing of Dr. James Davis, the first physician of the institution, in Case-book No. I, pp. 160-163:

James Craig. Aged 28 years. Single. Received from Lancaster District February 14, 1834—the 118th patient admitted to the lunatic asylum. The patient had recovered three years previously from an attack of insanity lasting a month or two. The existing attack began suddenly three months before admission. The preliminary history states that the patient was violent, homicidal and suicidal. The records show that for a time after admission he received, without benefit, the usual revulsive treatment of the period.

April 15th, *Insomnia and profuse diarrhœa are noted.* (From this date the records are copied *verbatim et literatim.* See the attached zinc plate reproduction. Italics are used where the symptoms indicate pellagra.)

"May 2nd, Ord. 20 grs. P. G. Camph. to be added to each dose. 5th, Better rather than worse—Med. continuant. May 23d. More quiet—*bowels loose.*—Cont. Laxa. Medicines except the mercury—Discont: it as his *gums are inflamed with some pytalism*—27th, Continue camph. and Hyos:—June 4th, *Emaciates*—cont: med.—*has diarrhœa*—Give Cret. & catechu—7th, Diarrhœa continues—Ord. Calomel: 15 grs. in 5 gr. doses, 2 hours apart; with Cret: ppt.—Discontinue Hyos: & camph: for the present—10th, *Diarrhœa has ceased*—he is stronger—10th, *Tendency to diarrhœa*—Ord. an occasional dose of catechu & Chalk—15th, looseness disappeared—18th, *Very crazy*—natl. stool. Ord. Prussic acid: 1 drop every hour—19th—Acid produces no sensible effect. Cont: same doses today—tomorrow encrease to 2 gutt:—next day 3 gutt: 22nd, Produced no manifest effect except that there seems to be more mental composure. Ord. Suspension Meds. 25th, Same. 27th, decidedly better in mind—28th, *Seized with another return of diarrhœa*—Ord. Cret: & laud:—29th, *Diarrhœa very severe—liquid—but natural color generally—sometimes white & chylous.* Ord. Sp: Camph 15 gutt: with 10 grs. cret: every 2 hours. 30th, *Emanciates—bowels irregular*—Ord. Diet, boiled milk & dry bread—July 2d, Same—3d, *Bowels too loose at night.* Ord. Cal 5 grs. July 4th, Ord. Canell: Alb: 25 grs. bis in die—5th, Rather better. 7th, Do. Ord. 1 Dr. Solut. S. Quin. every morning—in addition to the canel. alb:—16th, bowels better—health improves—mind at times very crazy; but in the main better. 22nd, Same, bowels a little disposed to diarrhœa. Ord. Lac. Asafœtid: i. e. 10 grs. G. Asafœt: noct. maneq: dissolved in water—Aug. 10th, mind the same—*Bowels loose, especially of nights.* Ord. Sulphuret: Hydrogen 10 grs. noct. maneq:—Omit Lac. Asafœt:—12th, Mends—bowels less loose—20th, The sulphuret seems to control the diarrhœa—encrease the dose to 15 grs.—*The skin of the upper part of the feet turned of a sombre brown color—perhaps some form of the purpura*—Ord.—Med. continuant:—and a lotion of red oak bark decoct^{n} to feet—31st, Better—Bowels more regular—*feet that got into sores healing.* Sep. 5th, Bowels too loose again—the Hepar Sulphur: has been discontinued for a few days for want of the article—Ord. Commence with again—7th

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Bowels too loose—mind the same—gains flesh—10th, *Bowels still loose —feet better*—no other change—Ord. A course of minute doses of calomel and Pul: Ant: say, 2 grs. P. Ant: & 1/16 of a gr. of calomel three times a day, morning, noon & night. My object is to promote a continued stimulation on the extreme vessels & nerves for a long period—so regulated as to avoid the sedative action of the mercury on the one hand and salivation on the other—16th, *The Purpura encreases and is spreading over the hands—as I suspect this affection is connected with a scrobutic habit,* I apprehend the mercurial course will disagree—Ord. Discont: mercurial, and substitute 6 grs. Acid: Tartar: Mane nocteque—23rd, no better—*Diarrhœa at night as bad as ever*—and for the last two days have given a wineglassfull of decoct: of red oak bark instead of the tartaric acid—but with no good effect.—Ord. Discont: Decoct: red oak bark; and administer eight drops of Tr. Iodine night and morning—to be encreased one drop every night—Oct. 4th, *Diarrhœa at night incorrigible*—Ord: Add a decoction of Liatris Spt: to each dose of Iodine—Oct. 5th, Bowels rather worse—Ord: Discontinue all med: except the decoct^{n} of the Liatris—give that pretty strong, half a tumbler night & morning. 8th, *Much puffing of the face and feet—purpura reappearing.—Bowels equally loose*—Stools more colored—Ord. Tr. Colchicum 8 gutt. noct: maneq: in addition to the Liatris—12th, Swelling diminished—bowels worse—Discont: colchicum & Liat. 15th, Same—*His case is decidedly scorbutic*—Ord. a diet of turnips and horseradish—25th Rather better—Nov. 1st, As perhaps the diarrhœa depends on ulceration of intestines, discontinue all other medicines, and give 1 gr. Sal. Mast: every morning and 2 grs. every night. Also continue diet of turnips. 10th, Rather better—17th, He is no better—Ord. Discontinue the Sal. Mast: & give 10 grs. Ext. Cicuta nocte maneque. 21st, *Gets worse*—22nd, *He expired.*

The original notes of this interesting case have been submitted for criticism among others to Drs. Lavinder and Grimm, of the U. S. Public Health and Marine-Hospital Service; to Dr. Robert Wilson, Jr., of Charleston, chairman of the South Carolina State Board of Health; and to Dr. J. J. Watson, of Columbia. They all independently agree that Dr. Davis has described an undoubted case of pellagra, as we know the disease to-day.

In commenting upon the case, Dr. Sandwith, the London pellagrologist, writes: "Many thanks for sending me the copy of the interesting record of 1834 from your hospital. The case may well have been pellagra, but I suppose it might be argued that it was scurvy with purpuric rash."

Scattered through this ancient case-book are records of similar cases, but none so complete. Some of the phrases used by the same writer in describing other cases may be noted, as "swelling

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of the feet and legs with redness of the skin" of a patient who died of diarrhœa, December, 1835. Another patient with three to six ash-colored and very offensive evacuations a day, had a "tongue too red and glazed"; another with "face and legs puffed with a singular puffing, not edematous, such as all our fatal filth-eating patients are attended with, whether attended with diarrhœa, dysentery or chronic fever." Still another patient, S. J. M., admitted in 1828, had in January, 1832, "an eruption somewhat herpetic on his neck, shoulders and arms. February 20. Eruption considerable. March 19. Eruption continues. In ordinary health April to July." Another patient admitted April 3, 1834, had dysenteric symptoms.

"Aug. 1st, legs swelling. 14th, bowels morbidly irritable. 20th, bowels less irritable, legs very purple or rather red. Legs less swollen, but will die. Sept. 1st, swelling diminished: Diarrhœa increased. 5th, suddenly seized with spasms and cramps of left side and limbs. Diarrhœa continues. 7th, Delirious. 16th, Expired, emaciated to a skeleton, this morning."

Conclusions.—It appears to me from all these imperfect and detached records that there has been in our institution for many years, probably from its opening in 1828, an elusive malady which has puzzled all physicians in charge. Some of these cases have developed seemingly in the institution, but the large majority of such patients have been admitted with the disease, thus establishing the fact of the endemicity of the condition.

Opinions about the disease have varied with the physicians, but the similarity of the condition to scurvy has been recognized early and late, and for a long while—1834 to 1865—it was also considered of a purpuric nature.

If we admit upon the testimony of those now living the existence of pellagra in our asylum, and, therefore, in the state at large, for 30 or 40 years or more, how shall we deny its presence here 60 or 80 years or even longer, in the light of Dr. Trezevant's published opinions and Dr. Davis's clinical notes? On the other hand, how shall we explain the recent great increase in the number of cases? If pellagra had existed in its present proportions it could not have been overlooked altogether or been entirely concealed under erroneous diagnoses.

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I think I may be pardoned for quoting a paragraph from our preliminary report to the State Board of Health in December, 1907:

"It is the opinion of the older members of the staff, that cases presenting pellagrous symptoms have appeared among our patients for some years, and the real nature of the malady has not been fully recognized and determined, but that latterly it is becoming much more frequent. These patients have come from various parts of the state, being possibly somewhat more numerous from the Piedmont section."

These early inferences have been fully confirmed by later experiences and investigations. Therefore, to one familar with the conditions and disease-picture of pellagra as found in South Carolina to-day, these notes on medical history render it highly probable that pellagra has existed in the state for very many years, but under a varied diagnostic nomenclature.

In the early days, the prevailing fatal diseases as recorded in our hospital were "chronic diarrhea" and "dysentery"; in the middle or post-bellum period, these terms were largely supplanted by "consumption," "exhaustion," and such vague diagnoses as "inanition," "marasmus," and "anasarca"; while in the last two decades, "tuberculosis," "meningo-encephalitis" and "syphilis" have taken precedence over the older and time-honored diagnoses. Can we infer that under these terms some cases of pellagra may have been hidden and misinterpreted?

Making due allowance for differences in the personal equation of the several observers, we cannot believe that changes in endemic conditions have been so great or radical as is implied if we accept the theory that pellagra is a new disease in South Carolina. For evidence is accumulating which proves that as the diagnosis of pellagra becomes more common, some of these other diseases have notably decreased. Recognizing also that pellagra has always been a disease of most subtle and obscure nature and difficult to diagnose in new territory, we cannot but suspect that if such a malady exists among us to-day, to the extent statistics show, then the same condition must have been present in our state for a long while, under many of the disguises it has always assumed.

It cannot, however, be affirmed with equal probability that the disease has prevailed for nearly a century in anything like its present proportions. To explain this increase is one of the prob-

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lems of the epidemiology of the disease. Probably pellagra has been endemic in the state for many years, but recently, from some cause, an epidemic has occurred.

As stated in the introduction, this is a presentation of a few interesting records, some memories and traditions and not a few inferences. From such data as I have presented, each may draw his own conclusions.

Personally, I cannot claim to have answered directly the interrogative title of my paper, but from the facts and traditions here assembled I feel convinced that pellagra is by no means a new disease in South Carolina and that it has probably been present in our State Hospital from its opening in 1828. Beyond that period, I have no data. It is worth remembering, however, that in 1829 the first publication about pellagra in France appeared. This event marked the beginning of many decades of interesting investigation and controversy now a part of the history of the disease.

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PELLAGRA.

From Early Records, 1834.

State Hospital for the Insane, Columbia, S. C.

Isaac Craig was admitted from Lancaster Dist. Feb. 18th 1834. He is about 28 years old Father talk-grayish blue eyes & brown hair for a long period - to regulated as to avoid the sedative action of the mercury on the one hand and salivation on the other - 5. 16th The Purpura commenced connected with a scorbutic habit. I suspected the mercurial 10 drops Acid Tartar: mane no tongue - 23d. No Letter - Diarrhoea at night as bad as ever - and for the last two days have given a decoction of Bark of red oak bark instead of the tinctura and - but with no good effect - and Decoct: Bucut: red oak bark, and add ounce eight drops of Tr. Iodine to night Oct. 4th Diarrhoea at night incorrigible - and add to decoct: 20 drops of Laud: Sydt to each dose of Iodine - Oct. 5th Mouth worse and Discontinue all med: except the decoct: of the Liatris - Gave that pretty strong half a tumbler to night & morning. 8th Much puffing of the face & feet - pupil contracted & quiet. not making an effort - 12th Swelling diminished - bowels worse - Decoct: colchicum & Liat hors Can

[redacted] — Nov. 1st Be per haps the diarrhea
and pain if per Sol Mant: every morn: and 2 hrs every night.

All continue diet of turnips — 10th Heather bitter — 17th Be is
no better — Did. discontinue the Sol Mant. & give 10 gtt Extr.
Cicuta mane meridiem. 21st Gtt worse — 22d Be easier
= pursued —

Proceedings of Societies.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.

PROCEEDINGS OF THE SIXTY-EIGHTH ANNUAL MEETING.

ATLANTIC CITY, N. J., TUESDAY, MAY 28, 1912.—FIRST SESSION.

The Association convened at 10 a. m. in the Southwest Pavilion of the Marlborough-Blenheim, Atlantic City, N. J., and was called to order by the President, Dr. Hubert Work, of Pueblo, Col.

THE PRESIDENT.—*Ladies and Gentlemen:* I take great pleasure in introducing to you the Mayor of Atlantic City, Hon. Harry Bacharach, who will deliver the address of welcome.

MAYOR BACHARACH.—*Mr. Chairman and Gentlemen:* For two reasons I regret very much that Senator Edge, who was to make the real address of welcome, is not with us today, but he is very busy, he being a candidate for re-election. The two reasons in particular are that the Senator usually goes around and makes my addresses for me while I simply show the audience what a fine looking Mayor they have. During the campaign before I was running for the office of Mayor of this city, when I received the nomination, I reported to the Committee and informed them that my "hat was in the ring," and I was ready to go out and make all the speeches necessary to elect me. They asked to be excused for a few minutes and when they returned they announced that it was decided that I was not to make any speeches if I was to be elected Mayor, but that they would send around some very eloquent speech-makers and let them tell of all the good qualities I possessed. Well, things went along all right until one night we went in the fourth ward, when the gentleman who had been making my speeches for me came to me and said: "This is the place I stop; I live in this ward and I do not intend to make any more speeches here; it is up to you now." I argued with him, but he said, "No, I stand pretty well with these people, they have elected me to office several times, and they may come to me and ask me to prove some of these things I have said." So I said, "All right, I'll do the best I can." I decided I would have to make some sort of a speech, so I got up and said, "Mr. Chairman and Gentlemen: I am not a speech-maker." Then for thirty minutes I talked to them and told them of the many good qualities of my friend. I noticed a very elderly gentleman looking at me very intently, scarcely taking his eyes from me, so I decided to talk right at him. After I had

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finished my speech he came to me and said, "You have converted me all right, I am going to vote for you." I said, "I thank you very much, indeed, but I am curious to know what has converted you over to my side." He said, "Because you are such a truthful man." And I said, "My friend, may I ask how you came to form that opinion of me?" And he said, "Well, you said that you were not a speech-maker, and I'll be damned if you are." If my words lack elegance, they are at least sincere.

I have been informed by one of the gentlemen here that I was coming among some very "crazy doctors." Personally, I think your services around the country are very much needed at the present time, and particularly in New Jersey. Perhaps by tomorrow we shall show that we need your services. However, we are very pleased and proud to have you gentlemen in our city, which we think is the greatest seashore resort in the country. We believe we have the best conducted city in the country, irrespective of size, and, therefore, we are particularly proud to have men of your caliber come here to see for yourselves how our city is conducted. Our board-walk, which we consider is one of the best and on which we have at times as high as 250,000 people, is a place where women can go and stay from early morning until late at night without being molested in the least regard. We have no open saloons or anything of that kind; we have the most successful hotel men and the best equipped hotels of any resort in the country. Our citizens are broad-minded, able, progressive men, looking out for the welfare of our visitors at all times, and, therefore, we are particularly pleased to see men of your caliber here, and we hope you will go away perfectly satisfied with the entertainment you have had, and show the people of your own cities that Atlantic City is not the city it is painted in some of our newspapers, but is a very progressive city, which its residents feel proud of, and now, in behalf of her citizens, I want to welcome you, Mr. Chairman and you gentlemen, to our city.

> "Come in the evening, or come in the morning;
> Come when you're looked for, or come without warning.
> A thousand welcomes you'll find here before you,
> And the oftener you come the more we'll adore you."

And now, in behalf of our citizens, I desire to present to you the key to our city, knowing that it will not be misused, and assuring you that for one night, at least, "curfew shall not ring." (Applause.)

THE PRESIDENT.—In behalf of the Association I wish to thank you, Mr. Mayor, for this cordial welcome. There seems so little I can promise you in return for this welcome that I hesitate to know what to say, but as a return for the freedom of the city which you have so graciously bestowed, there may come a time—there often does come a time even in the lives of the most upright officials—when some one questions their acts, and there may come a time, but we hope not, when you may be called upon to explain something you have done officially. If that should be so and there seems no other way of escape, just call upon this Association and

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we will furnish you men who will prove you competent or "incompetent" as you may desire. (Applause.)

We hope you will remain for the convention.

THE PRESIDENT.—I will now ask the Secretary to read the report of the Council.

REPORT OF THE COUNCIL TO THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.

ATLANTIC CITY, MAY 28, 1912.

The Council met on the evening of May 27, 1912, in the council room of the Marlborough-Blenheim, Atlantic City, N. J.

The Council has received and transmits, herewith, the report of the Treasurer for the current year. Also a statement of the membership of the Association to date.

The Council recommends for election to active membership the following named physicians:

W. L. Allison, M. D., Fort Worth, Tex.; James M. Barstow, M. D., Council Bluffs, Ia.; Frederic C. Eastman, M. D., Brooklyn, N. Y.; Charles F. Gilliam, M. D., Columbus, O.; W. B. Kern, M. D., Hastings, Neb.; Daniel D. Lustig, M. D., San Francisco, Cal.; John J. MacPhee, M. D., New York, N. Y.; Jose A. Malberty, M. D., Havana, Cuba; Herman G. Matzinger, M. D., Buffalo, N. Y.; Edward Mellus, M. D., West Newton, Mass.; John C. Mitchell, M. D.; Brockville, Ont.; Guy Payne, M. D., Cedar Grove, N. J.; Joseph P. Pecival, M. D., Dunning, Ill.; Abra C. Pettijohn, M. D., St. Joseph, Mo.; Mary E. Pogue, M. D., Lake Geneva, Wis.; Arthur W. Rogers, M. D., Oconomawoc, Wis.; Thomas W. Salmon, M. D., New York, N. Y.; Adin Sherman, M. D., Winnebago, Wis.; H. P. Sights, M. D., Hopkinsville, Ky.; H. M. Smith, M. D., Las Vegas, N. Mex.; Robert Percy Smith, M. D., Seattle, Wash.; F. S. White, M. D., San Antonio, Tex.; Alfred Gordon, M. D., Philadelphia, Pa.

The Council recommends the transfer of the following named Associate members to the Active class:

Charles E. Atwood, M. D., New York, N. Y.; Thomas E. Bamford, M. D., Syracuse, N. Y.; George B. Campbell, M. D., New York, N. Y.; A. J. Capron, M. D., Owego, N. Y.; Harry D. Earl, M. D., Jamestown, N. D.; Alberta S. Guibord, M. D., Boston, Mass.; Edward L. Hanes, M. D., Rochester, N. Y.; C. Floyd Haviland, M. D., Kings Park, N. Y.; George M. Kline, M. D., Hathorne, Mass.; Henry I. Klopp, M. D., Allentown, Pa.; Charles T. LaMoure, M. D., Gardner, Mass.; Andrew Macphail, M. D., Montreal, Que.; R. E. Mitchell, M. D., Eau Claire, Wis.; George O'Hanlon, M. D., New York, N. Y.; Samuel T. Orton, M. D., Worcester, Mass.; Mason W. H. Pitman, M. D., Bowdoinham, Me.; A. J. Rosanoff, M. D., Kings Park, N. Y.; Donald L. Ross, M. D., Mansfield Depot, Conn.; Walter G. Ryon, M. D., Albany, N. Y.; David A. Shirres, M. D., Montreal, Que.; Elbert M. Somers, M. D., Brooklyn, N. Y.; Walter A. Taylor, M. D., Trenton, N. J.; Guy H. Williams, M. D., Columbus, O.

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The Council recommends that the following named physicians be elected to Associate membership:

Frederick E. Allen, M. D., Talmage, Cal.; Barton F. Andrews, M. D., Sonyea, N. Y.; Bruce B. Barber, M. D., Columbus, O.; E. C. Barnes, M. D., Guelph, Ont.; Nell W. Bartram, M. D., Kings Park, N. Y.; James Ramsdell Bloss, M. D., Huntington, W. Va.; William A. Boyd, M. D., Westport, Conn.; Sherman Brown, M. D., Kings Park, N. Y.; Howard M. Brundage, M. D., Columbus, O.; William A. Bryan, M. D., Cherokee, Ia.; Ross McC. Chapman, M. D., Binghamton, N. Y.; Howard T. Child, M. D., Hospital, Ill.; A. T. Colnon, M. D., Ogdensburg, N. Y.; David Corcoran, M. D., Central Islip, L. I.; Anna Craig, M. D., Kings Park, N. Y.; Ralph Deming, M. D., Fergus Falls, Minn.; Francis E. Devlin, M. D., Montreal, Que.; Percy L. Dodge, M. D., Poughkeepsie, N. Y.; Delmer D. Durgin, M. D., Kings Park, N. Y.; R. J. Dysart, M. D., Winnebago, Wis.; Richard G. Eaton, M. D., Kings Park, N. Y.; Halle Laura Ewing, M. D., Lincoln, Neb.; Bernard Feldstein, M. D., Kings Park, N. Y.; Drury L. Fish, M. D., Hospital, Ill.; Christopher Fletcher, M. D., Willard, N. Y.; Edward A. Foley, M. D., Jacksonville, Ill.; William E. Gesregen, M. D., Stamford, Conn.; George W. Gorrill, M. D., Buffalo, N. Y.; H. L. Goss, M. D., Osawatomie, Kans.; Julius E. Haight, M. D., Utica, N. Y.; Ross D. Helmer, M. D., Poughkeepsie, N. Y.; Hugh Carter Henry, M. D., Petersburg, Va.; O. S. Hubbard, M. D., Parsons, Kans.; Mary Keyt Isham, M. D., Columbus, O.; Wilma H. Jacobs, M. D., Hospital, Ill.; Florence A. King, M. D., Poughkeepsie, N. Y.; Robert King, M. D., Ogdensburg, N. Y.; Arthur G. Lane, M. D., Ogdensburg, N. Y.; Fletcher Langdon, M. D., Gallipolis, O.; Sylvester R. Leahy, M. D., Kings Park, N. Y.; William Leavitt, M. D., Utica, N. Y.; Peter MacNaughton, M. D., Hamilton, Ont.; H. P. Mahan, M. D., Parsons, Kans.; Herman Frank May, M. D., Poughkeepsie, N. Y.; Samuel F. Mellen, M. D., Poughkeepsie, N. Y.; Willis E. Merriman, M. D., Poughkeepsie, N. Y.; Arthur Selwyn Moore, M. D., Middletown, N. Y.; Glenn E. Myers, M. D. New York, N. Y.; H. C. Norquay, M. D., Selkirk, Manitoba; Harlam L. Paine, M. D., Hathorne, Mass.; Charles S. Parker, M. D., Kings Park, N. Y.; Ralph S. Pettibone, M. D., Williard, N. Y.; Horace Phillips, M. D., Philadelphia, Pa.; Clarence A. Potter, M. D., Collins, N. Y.; Harry D. Purdum, M. D., Sykesville, Md.; Charles F. Read, M. D., Hospital, Ill.; John R. Ross, M. D., Ogdensburg, N. Y.; J. T. Rooks, M. D., Hospital, Ill.; George A. Rowland, M. D., Columbus, O.; William Darrow Runyon, M. D., Clarinda, Ia.; Rose A. Russell, M. D., Cherokee, Ia.; Walter H. Sanford, M. D., Kings Park, N. Y.; C. von A. Schneider, M. D., Collins, N. Y.; Thompson P. Scott, M. D., Topeka, Kans.; O. E. Smith, M. D., Fergus Falls, Minn.; F. J. Sullivan, M. D., Hospital, Ill.; Nelson W. Thompson, M. D., Middletown, N. Y.; Tom B. Throckmorton, M. D., Cherokee, Ia.; William J. Tiffany, M. D., Binghamton, N. Y.; Leona E. Todd, M. D., Poughkeepsie, N. Y.; Walter L. Treadway, M. D., Jacksonville, Ill.; Henry L. Trenkle, M. D., Flint, Mich.; R. P. Truitt, M. D., Trenton, N. J.; Willard H. Veeder, M. D., Rochester, N. Y.; Eloise

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Walker, M. D., Binghamton, N. Y.; Philip C. Washburn, M. D., Kings Park, N. Y.; Chester Waterman, M. D., Ogdensburg, N. Y.; Paul G. Weston, M. D., Warren, Pa.; Ray Lester Whitney, M. D., Worcester, Mass.; Harry D. Williams, M. D., Trenton, N. J.; William W. Wright, M. D., New York, N. Y.; Y. H. Yarbrough, M. D., Milledgeville, Ga.; K. H. Yeretzian, M. D., Stamford, Conn.

The Council has received the following applications for Active membership. In accordance with the constitution, final consideration of these will be deferred until next year.

Samuel T. Armstrong, M. D., Katonah, N. Y.; A. Fitshugh Beverly, M. D., Austin, Tex.; Abraham A. Brill, M. D., New York, N. Y.; Charles Augustus Barlow, M. D., Spencer, W. Va.; G. W. Brown, M. D., Williamsburg, Va.; Louis Casamajor, M. D., New York, N. Y.; Frank L. Christian, M. D., Elmira, N. Y.; Eugene Cohn, M. D., Peoria, Ill.; William A. Crooks, M. D., Watertown, Ill.; E. J. Emerick, M. D., Columbus, O.; Ernest B. Emerson, M. D., Bridgewater, Mass.; James M. Forster, M. D., Toronto, Ont.; George H. Freeman, M. D., St. Peter, Minn.; Daniel H. Fuller, M. D., Boston, Mass.; William E. Gardner, M. D., Lakeland, Ky.; D. W. Griffin, M. D., Norman, Okla.; Ralph T. Hinton, M. D., Elgin, Ill.; W. M. Hotchkiss, M. D., Jamestown, N. Dak.; Robert Ingram, M. D., Cincinnati, O.; J. Allen Jackson, M. D., Philadelphia, Pa.; Frank H. Jenks, M. D., Rockford, Ill.; G. G. Kineon, M. D., Gallipolis, O.; Arthur Clyde Knight, M. D., Warm Springs, Mont.; Charles G. Lyon, M. D., Binghamton, N. Y.; Mary Lawson Neff. M. D., Boston, Mass.; M. P. Overholser, M. D., Nevada, Mo.; Christopher J. Patterson, M. D., Troy, N. Y.; Stephen R. Pietrowicz, M. D., Chicago, Ill.; Herbert William Powers, M. D., Kenilworth, Ill.; William B. Pritchard, M. D., New York, N. Y.; J. Anson Smith, M. D., Blackwood, N. J.; William G. Somerville, M. D., Memphis, Tenn.; Reeve Turner, M. D., New York, N. Y.; T. H. Weisenburg, M. D., Philadelphia, Pa.; B. F. Williams, M. D., Lincoln, Neb.; Edward H. Wiswall, M. D., Wellesley, Mass.

The Council has received the following applications for transfer from Active membership to the Associate class:

E. B. Funkhouser, M. D., Trenton, N. J.; William B. Cornell, M. D., Hathorne, Mass.

The Council has received the resignations of the following members:

E. Scott Blair, M. D., Patton, Cal.; G. L. Chamberlain, M. D., Placerville, Cal.; Edson C. Brown, M. D., Mansfield, O.; Ernest Jones, M. D., Toronto, Ont.

On motion, duly seconded, the report of the Council was accepted and adopted.

THE PRESIDENT.—The names of those recommended for election to membership will lie upon the table until tomorrow morning, in accordance with the constitution. The other names will be referred to the Council for final action next year.

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We will now hear the report of the Treasurer.

Before submitting his report the Treasurer desires to state that the membership of the American Medico-Psychological Association at the present time, and the changes during the past year are as follows:

HONORARY MEMBERS.

Former number	22	
Died	1	
Present number		21

ACTIVE MEMBERS.

Former number	331	
Associate to Active	17	
Admitted	18	
Resigned	3	
Died	3	
Present number		360

ASSOCIATE MEMBERS.

Former number	143	
Admitted	15	
Associate to Active	17	
Died	1	
Present number		140
Total membership		521

REPORT OF TREASURER, 1911-1912.

DEBITS.

Balance on hand June 22, 1911	$3,296.65
Received for dues:	
Active members	1,725.00
Associate members	248.00
Advance dues:	
Abra C. Pettijohn, M. D.	5.00
H. P. Sights, M. D.	5.00
Charles F. Gilliam, M. D.	5.00
George H. Riggs, M. D.	5.00
Robert B. Lamb, M. D.	5.00
D. W. Griffin, M. D.	5.00
M. P. Overholser, M. D.	5.00
Francis E. Devlin, M. D.	2.00
Peter MacNaughton, M. D.	2.50
E. C. Barnes, M. D.	2.00
Sale of gummed lists	4.75
Check discount	.35
Interest on bank deposits	103.45
Total	$5,419.70

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CREDITS.

1911			
June.	28.	Express (Denver meeting)	$5.43
	29.	Robert J. Powers, stenographer, expenses at annual meeting, 1911	130.90
	29.	Expenses Hon. Alva Adams (Denver meeting)	10.30
	29.	Mercereau Printery (ballots)	2.50
	29.	Henry R. Stedman (expenses committee on expert testimony)	156.02
	30.	Mercereau Printery (receipts and stationery)	17.54
Aug.	7.	Mercereau Printery (envelopes)	23.19
Sept.	15.	Mercereau Printery (notices)	2.25
	20.	Adolf Meyer (circulars and postage)	9.70
Oct.	5.	Lord Baltimore Press (printing Transactions, list of members and express on same)	1,207.83
	25.	Mercereau Printery (notices)	1.00
Nov.	8.	Norman T. A. Munder & Co. (letterheads and envelopes)	6.25
	8.	Edward S. Graney (freight and express)	6.30
Dec.	7.	Henry M. Hurd (Historical Committee)	100.00
	11.	Oscar P. Chase (postage)	10.00
	14.	Newton M. Shaffer (Assessment, Congress American Physicians and Surgeons)	423.98
	11.	Robert J. Powers (stenographer, reporting meeting, 1911)	60.00
	23.	Oscar P. Chase (clerical services)	5.00
	23.	Margaret Bloxham (clerical services)	5.00
1912			
Jan.	8.	Oscar P. Chase (stamped envelopes)	21.24
	11.	Mercereau Printery (slips)	1.75
Feb.	27.	Mercereau Printery (preliminary program and application form)	18.25
Mar.	18.	Henry M. Hurd (Historical Committee)	100.00
Apr.	8.	Charles G. Wagner (telephone, telegrams and carfares)	3.00
	8.	Mercereau Printery (letterheads)	2.25
May	1.	Oscar P. Chase (postage)	15.00
	15.	Edward N. Brush, American Journal of Insanity	300.00
	16.	Margaret Bloxham (clerical services)	35.00
	16.	Mercereau Printery (programs, cards and envelopes)	65.50
	16.	Oscar P. Chase (postage)	8.42
	16.	Oscar P. Chase (clerical services)	20.00
			$2,773.60

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Balance on hand as follows:

Emigrant Industrial Savings Bank	$1,712.82
Binghamton Savings Bank	734.31
City National Bank, Binghamton, N. Y.	198.97
Total	$5,419.70

Respectfully submitted,
CHARLES G. WAGNER, *Treasurer.*

May 18, 1912.

On motion, duly seconded, the report of the Treasurer was received and referred to the Auditors.

THE PRESIDENT.—This very remarkable increase in membership speaks volumes for the industry and tact of our Secretary, and it is no little credit to the standing of the Association.

The next thing, gentlemen, on the program will be the report of the Committee of Arrangements.

DR. COTTON.—I have been requested to arrange for some sort of an evening's entertainment. Two or three suggestions were made; one was that we have a dinner in this hotel for all the members of the Association; another was to have a smoker. I did not go ahead and make any definite arrangements, but we can very easily have a smoker if enough members will express a desire to come. The Hotel Islesworth has a very good café, and the management will give it to us exclusively for the evening if the members wish it. I have taken no action in the matter, as I did not know if enough were interested to desire it.

THE PRESIDENT.—I might suggest that you consult with your committee and report at some later session.

We are now ready for the report of the Editors of the AMERICAN JOURNAL OF INSANITY.

To the Members of the American Medico-Psychological Association: Gentlemen.—On behalf of the Editorial Board, I am happy to be able to state that the affairs of the AMERICAN JOURNAL OF INSANITY are in a fairly prosperous condition.

Volume sixty-eight, which has just closed, comprises more than 780 pages and has, we believe can be truthfully said, been a better volume in many respects than any of its predecessors. The publishers have on hand a considerable cash balance, and the editors do not propose this year to ask any contribution from the treasury of the Association. The editors desire to obtain the authority of the Association to have prepared and publish an index of the volumes of the JOURNAL since its first issue. It is impossible to state or even estimate at present, the cost of such an index, but a large share of the expense can be borne by the JOURNAL and no doubt some return can be expected from the sale of the index.

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The editors again take occasion to urge upon all members to subscribe for the JOURNAL, and upon the heads of institutions to also subscribe for their hospital libraries. The JOURNAL is the organ and the property of the Association, and certainly should receive its support.

Respectfully submitted for the Editorial Board.

EDWARD N. BRUSH.

THE PRESIDENT.—You have heard the very excellent report of the editors of the JOURNAL OF INSANITY. That department is also in a very prosperous condition.

On motion the report was accepted and adopted and the vouchers referred to the Auditors.

THE PRESIDENT.—Dr. Brush desires that the Auditing Committee return to him the vouchers for his files after they have been inspected.

DR. BRUSH.—I would ask that the suggestion in regard to publishing an index be referred to the Council for action at this meeting so that we will know whether it is desirable to publish the index.

THE PRESIDENT.—This of course will involve a little expense, we do not know how much, but Dr. Brush desires that this question be referred to the Council for their approval.

The next business is the appointment of a Nominating Committee. This is a duty which falls to the Chair, and I shall appoint on this committee the following members:

Dr. Charles W. Pilgrim, New York; Dr. Byron M. Caples, Wisconsin; Dr. G. H. Moody, Texas.

There will now be a recess for the purpose of registration of members and visitors. I hope every member and visitor present will register their names with the Secretary.

The following members registered and were in attendance during the whole or a part of the meeting:

Abbot, E. Stanley, M. D., Assistant Physician McLean Hospital, Waverly, Mass.

Allen, H. D., M. D., Superintendent Allen's Invalid Home, Milledgeville, Ga.

Applegate, C. F., M. D., Superintendent Mt. Pleasant State Hospital, Mt. Pleasant, Ia.

Arthur, Daniel H., M. D., Superintendent State Homeopathic Hospital, Gowanda, N. Y.

Ashley, Maurice C., M. D., Superintendent Middletown State Homeopathic Hospital, Middletown, N. Y.

Babcock, James W., M. D., Superintendent State Hospital for the Insane, Columbia, S. C.

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Beemer, Nelson H., M. D., Medical Superintendent Hospital for the Insane, Mimico, Ont.

Beutler, W. F., M. D., Superintendent Milwaukee Asylum for Chronic Insane, Wauwatosa, Wis.

Blumer, G. Alder, M. D., Medical Superintendent Butler Hospital, Providence, R. I.

Bond, G. F. M., M. D., Proprietor and Physician-in-Charge Dr. Bond's House, 960 North Broadway, Yonkers, N. Y.

Briggs, L. Vernon, M. D., Physician to Mental Department, Boston Dispensary, 64 Beacon St., Boston, Mass.

Brush, Edward N., M. D., Physician-in-Chief and Superintendent Sheppard and Enoch Pratt Hospital, Towson, Md.

Burgess, T. J. W., M. D., Medical Superintendent Protestant Hospital for Insane, Montreal, Que.

Burr, C. B., M. D., Medical Director Oak Grove Hospital, Flint, Mich.

Calder, D. H., M. D., Superintendent State Mental Hospital, Provo, Utah.

Campbell, George B., M. D., Chief Medical Examiner, State Hospital Commission, No. 1 Madison Ave., New York City.

Caples, B. M., M. D., Superintendent Waukesha Springs Sanitarium, Waukesha, Wis.

Carey, Harris May, M. D., Superintendent Eastern Pennsylvania State Institution for Feeble-Minded and Epileptic, Spring City, Pa.

Carlisle, Chester Lee, M. D., Second Assistant Physician Kings Park State Hospital, Kings Park, L. I.

Carpenter, Howard C., M. D., Second Assistant and Pathologist Hudson River State Hospital, Poughkeepsie, N. Y.

Carroll, Robert S., M. D., Medical Director Highland Hospital, Asheville, N. C.

Chase, Robert H., M. D., Medical Superintendent Friends' Asylum, Frankford, Philadelphia, Pa.

Clark, Fred P., M. D., Superintendent State Hospital, Stockton, Cal.

Clark, J. Clement, M. D., Superintendent Springfield State Hospital, Sykesville, Md.

Copp, Owen, M. D., Superintendent Pennsylvania Hospital for the Insane, Philadelphia, Pa.

Cotton, Henry A., M. D., Medical Director New Jersey State Hospital, Trenton, N. J.

Crumbacker, W. P., M. D., Superintendent Independence State Hospital, Independence, Ia.

Dewey, Richard, M. D., Physician-in-Charge Milwaukee Sanitarium, Wauwatosa, Wis.

Dold, Wm. Elliott, M. D., Medical Superintendent River Crest Sanitarium, Astoria, L. I.

Donohoe, George, M. D., Superintendent State Hospital for Inebriates, Knoxville, Ia.

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Drewry, William Francis, M. D., Superintendent Central State Hospital, Petersburg, Va.

Dunton, Wm. Rush, Jr., M. D., Assistant Physician Sheppard and Enoch Pratt Hospital, Towson, Md.

Elliott, Robert M., M. D., Superintendent State Hospital, Willard, N. Y.

English, Walter M., M. D., Superintendent Hospital for Insane, Hamilton, Can.

Eyman, Henry C., M. D., Superintendent Massillon State Hospital, Massillon, O.

Fisher, E. Moore, M. D., Senior Assistant Physician New Jersey State Hospital, Greystone Park, N. J.

Fordyce, O. O., M. D., Superintendent Athens State Hospital, Athens, O.

French, Edward, M. D., Superintendent Medfield State Asylum, Harding, Mass.

Frost, Henry P., M. D., Superintendent Boston State Hospital, Dorchester Centre, Mass.

Fuller, Solomon C., M. D., Pathologist Westboro State Hospital, Westboro, Mass.

Gilliam, Charles F., M. D., Superintendent Columbus State Hospital, Columbus, O.

Gorst, Charles, M. D., Superintendent Wisconsin State Hospital, Mendota, Wis.

Green, E. M., M. D., Clinical Director Georgia State Sanitarium, Milledgeville, Ga.

Gundry, Alfred T., M. D., Medical Director Gundry Sanitarium, Catonsville, Md.

Gundry, Richard F., M. D., Medical Director and Proprietor The Richard Gundry Home, Catonsville, Md.

Halsey, Luther M., M. D., Chairman Medical Committee New Jersey State Hospital, Williamstown, N. J.

Hammond, F. S., M. D., Pathologist New Jersey State Hospital, Trenton, N. J.

Hancker, William H., M. D., Medical Superintendent Delaware State Hospital, Farnhurst, Del.

Harmon, F. W., M. D., Superintendent Longview Hospital, Cincinnati, O.

Harrington, Arthur H., M. D., Superintendent State Hospital for Insane, Howard, R. I.

Harris, Isham G., M. D., Superintendent Mohansic State Hospital, Yorktown, N. Y.

Herring, Arthur P., M. D., Secretary State Lunacy Commission, 330 North Charles St., Baltimore, Md.

Heyman, M. B., M. D., First Assistant Physician Central Islip State Hospital, Central Islip, L. I.

Hill, Charles G., M. D., Physician-in-Chief, Mt. Hope Retreat, Baltimore, Md.

Hill, Samuel S., M. D., Superintendent State Asylum for Insane, Wernersville, Pa.

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Hills, Frederick L., M. D., Superintendent Eastern Maine Insane Hospital, Bangor, Me.

Houston, John A., M. D., Superintendent Northampton State Hospital, Northampton, Mass.

Howard, Eugene H., M. D., Medical Superintendent State Hospital, Rochester, N. Y.

Howard, Herbert B., M. D., Superintendent Peter Brent Brigham Hospital, Boston, Mass.

Hummer, H. R., M. D., Superintendent and Special Disbursing Agent Asylum for Insane Indians, Canton, S. Dak.

Hurd, Arthur W., M. D., Superintendent State Hospital, Buffalo, N. Y.

Hurd, Henry M., M. D., Secretary Johns Hopkins Hospital, Baltimore, Md.

Hutchings, Richard H., M. D., Superintendent St. Lawrence State Hospital, Ogdensburg, N. Y.

Jones, L. M., M. D., Superintendent Georgia State Sanitarium, Milledgeville, Ga.

Kilbourne, Arthur F., M. D., Superintendent State Hospital, Rochester, Minn.

La Moure, Charles T., M. D., Superintendent Gardner State Colony, Gardner, Mass.

Langdon, F. W., M. D., Medical Director Cincinnati Sanitarium, Cincinnati, O.

Mabon, William, M. D., Superintendent and Medical Director Manhattan State Hospital, Ward's Island, New York City.

May, James V., M. D., Medical Member New York State Hospital Commission, Albany, N. Y.

Meredith, H. B., M. D., Superintendent and Physician State Hospital for Insane, Danville, Pa.

Miller, Henry W., M. D., Superintendent Maine Insane Hospital, Augusta, Me.

Mills, Charles K., M. D., Professor of Neurology, University of Pennsylvania, Philadelphia, Pa.

Mitchell, H. W., M. D., Superintendent State Hospital, Warren, Pa.

Mitchell, J. C., M. D., Medical Superintendent Hospital for Insane, Brockville, Ont.

Moody, G. H., M. D., Superintendent Dr. Moody's Sanitarium, San Antonio, Tex.

Mosher, J. M., M. D., 170 Washington Ave., Albany, N. Y.

Moulton, A. R., M. D., Senior Assistant Physician Pennsylvania Hospital for Insane, Philadelphia, Pa.

Orth, H. L., M. D., Superintendent and Physician Pennsylvania State Lunatic Hospital, Harrisburg, Pa.

Orton, Samuel T., M. D., Pathologist State Hospital, Worcester, Mass.

Payne, Guy, M. D., Medical Superintendent Essex Co. Hospital for Insane, Cedar Grove, N. J.

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Perry, Middleton L., M. D., Superintendent Kansas State Hospital for Epileptics, Parsons, Kans.

Pettijohn, Abra C., M. D., Superintendent State Hospital No. 2, St. Joseph, Mo.

Pilgrim, Charles W., M. D., Medical Superintendent Hudson River State Hospital, Poughkeepsie, N. Y.

Pomeroy, E. H., M. D., Bradentown, Fla.

Priddy, A. S., M. D., Superintendent Virginia State Epileptic Colony, Madison Heights, Va.

Richardson, Wm. W., M. D., Chief Physician, Department for Men, State Hospital for Insane, Norristown, Pa.

Ripley, Horace G., M. D., Assistant Superintendent Taunton State Hospital, Taunton, Mass.

Rosanoff, A. J., M. D., First Assistant Physician Kings Park State Hospital, Kings Park, N. Y.

Russell, William Logie, M. D., Medical Superintendent Bloomingdale Hospital, White Plains, N. Y.

Ryon, Walter G., M. D., Medical Inspector for State Hospital Commission, 36 Brookside Ave., Menands, Albany, N. Y.

Salmon, Thomas W., M. D., National Committee for Mental Hygiene, 50 Union Square, New York City.

Sandy, William C., M. D., Assistant Physician New Jersey State Hospital, Trenton, N. J.

Scribner, E. V., M. D., Medical Superintendent State Hospital, Worcester, Mass.

Searcy, James T., M. D., Superintendent of Alabama Insane Hospitals, Tuscaloosa, Ala.

Shepherd, A. F., M. D., Member Ohio Board of Administration, Columbus, O.

Sherman, Adin, M. D., Superintendent Northern Hospital for the Insane, Winnebago, Wis.

Sights, H. P., M. D., Superintendent Western State Hospital, Hopkinsville, Ky.

Skoog, A. L., M. D., Associate Professor Neurology, University of Kansas, Kansas City, Mo.

Smith, Samuel E., M. D., Medical Superintendent Eastern Indiana Hospital for Insane, "Easthaven," Richmond, Ind.

Snavely, E. H., M. D., Assistant Physician Essex Co. Hospital for Insane, Cedar Grove, N. J.

Somers, E. M., M. D., Superintendent Long Island State Hospital, Brooklyn, N. Y.

Southard, E. E., M. D., Director Psychopathic Dept., Boston State Hospital, Boston, Mass.

Spencer, Elizabeth, M. D., Chief Resident Physician, Dept. for Women, State Hospital, Norristown, Pa.

Stick, H. Louis, M. D., Superintendent Worcester State Asylum, Worcester, Mass.

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Taylor, Isaac M., M. D., Resident Physician and Superintendent Broadoaks Sanatorium, Morganton, N. C.

Terflinger, F. W., M. D., Medical Superintendent Northern Hospital for Insane, "Longcliff," Logansport, Ind.

Thompson, Charles E., M. D., Executive Officer State Board of Insanity, State House, Boston, Mass.

Thompson, W. N., M. D., Physician and Superintendent Hartford Retreat, Hartford, Conn.

Tuttle, George T., M. D., Medical Superintendent McLean Hospital, Waverly, Mass.

Voldeng, M. N., M. D., Superintendent State Hospital, Cherokee, Ia.

Wade, J. Percy, M. D., Medical Superintendent Spring Grove Hospital, Catonsville, Md.

Wagner, Charles G., M. D., Medical Superintendent Binghamton State Hospital, Binghamton, N. Y.

White, Moses J., M. D., Medical Superintendent Milwaukee Hospital for Insane. Wauwatosa, Wis.

Williams, Tom A., M. D., 1758 K, Washington, D. C.

Wilson, William T., M. D., Medical Superintendent Hospital for Insane, Penetanguishene, Ont.

Winterode, Robert Preston, M. D., Superintendent Crownsville State Hospital, Crownsville, Md.

Witte, Max E., M. D., Superintendent State Hospital, Clarinda, Ia.

Woodbury, Frank, M. D., Secretary to Committee on Lunacy, Board of Public Charities, 717 Bulletin Building, Philadelphia, Pa.

Woodson, C. R., M. D., Superintendent Dr. C. R. Woodson's Sanitarium, St. Joseph, Mo.

Work, Hubert, M. D., Superintendent Woodcroft Hospital, Pueblo, Col.

Yeretzian, K. H., M. D., Assistant Physician State Hospital, Columbus, O.

The following visitors and guests of the Association registered their names with the Secretary:

Ashley, Mrs. Maurice C., Middletown, N. Y.

Ashley, Miss Marguerite, Middletown, N. Y.

Ashley, Miss Rhea Evelynn, Middletown, N. Y.

Beers, Clifford W., Secretary National Committee for Mental Hygiene, 50 Union Square, New York City.

Brumback, J. Edward, M. D., Assistant Physician Eastern State Hospital, Williamsburg, Va.

Burnett, S. Grover, M. D., Medical Superintendent Burnett Sanitarium, 3100 Euclid Ave., Kansas City, Mo.

Caples, Mrs. B. M., Waukesha, Wis.

Carlisle, Mrs. Chester Lee, Kings Park, N. Y.

Carothers, T. R., M. D., Regent State Hospital for Insane, Rock Hill, S. C.

Chittenden, Arthur S., M. D., Binghamton, N. Y.

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Clark, Mrs. J. Clement, Sykesville, Md.

Dominick, Fred H., M. D., Chairman Board of Regents S. C. State Hospital for Insane, Newberry, S. C.

Elwood, Everett S., Executive Secretary Committee on Mental Hygiene State Charities Aid Association, 105 E. 22d St., New York City.

Fisher, Mrs. E. Moore, Greystone Park, N. J.

Gardiner, Thomas W., Member Kentucky State Board of Control, Madisonville, Ky.

Gardiner, William E., M. D., Superintendent Central State Hospital, Lakeland, Ky.

Green, M. K., M. D., Assistant Physician Wisconsin State Hospital, Mendota, Wis.

Griffin, D. W., M. D., Superintendent Oklahoma Sanitarium, Norman, Okla.

Herr, Daniel C., Member Board of Trustees, Pennsylvania State Lunatic Hospital, Harrisburg, Pa.

Hotchkiss, W. M., M. D., Superintendent North Dakota State Hospital, Jamestown, N. Dak.

Hotchkiss, Mrs. Margaret, Jamestown, N. Dak.

Hutchings, Mrs. Richard H., Ogdensburg, N. Y.

King, Florence A., M. D., Hudson River State Hospital, Poughkeepsie, N. Y.

Markens, Edward W., M. D., 444 High St., Newark, N. J.

Moody, Mrs. G. H., San Antonio, Tex.

Neff, Mary Lawson, M. D., Supervisor Occupational Therapy, State Board of Insanity, State House, Boston, Mass.

Nevett, C. A., M. D., Superintendent Eastern State Hospital, Lexington, Ky.

Patterson, Christopher J., M. D., Physician-in-Charge, Marshall Sanitarium, Troy, N. Y.

Scribner, Mrs. E. V., Worcester, Mass.

Selby, John H., M. D., Director Roentgen Laboratory, St. Mary's Hospital, Rochester, Minn.

Skinner, N. N., M. D., Consulting Surgeon Willard State Hospital, 447 Main St., Geneva, N. Y.

Tulledge, E. Kilbourne, 843 N. 63d St., Philadelphia, Pa.

Voldeng, Mrs. M. N., Cherokee, Ia.

Wagner, Mrs. Charles G., Binghamton, N. Y.

Wall, Garrett S., President State Board of Control Charitable Institutions, Maysville, Ky.

Wescott, C. C., M. D., Atlantic City Hospital, Atlantic City, N. J.

Weisenburg, T. H., M. D., Prof. Clinical Neurology and Neuropathology Medico-Chirurgical College, Philadelphia, Pa.

THE PRESIDENT.—The meeting will come to order. Heretofore, memorial notices of deceased members have been read by title. The personal feeling that we owe these men who have worked in the Association demands

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that we pay their memory more respect, and I will state that those who have prepared these memorials will be expected to read them as their names are called.

The following memorial notices were read:

Dr. J. Elvin Courtney, by Robert B. Lamb, M. D. (read by the Secretary); Dr. J. N. Whitaker, by L. M. Jones, M. D.; Dr. I. W. Blackburn, by William A. White, M. D. (by title); Dr. George F. Jelley, by Walter Channing, M. D. (read by the Secretary); Dr. Robert E. Doran, by William L. Russell, M. D.; Dr. D. R. Wallace, by G. H. Moody, M. D.; Dr. A. J. Lyons (by title); Dr. Morris S. Guth, by H. A. Hutchinson, M. D. (by title); Dr. James McKee, by John McCampbell, M. D. (by title); Dr. Horace W. Eggleston, by Charles G. Wagner, M. D. (by title).

THE PRESIDENT.—By some trick of fate, or otherwise, and I rather suspect the Secretary, the President's address was made to appear on the program immediately following the memorial notices. I presume the President is entitled to read his own memorial notice.

I will ask Dr. Searcy, the Vice-President, to take the chair.

DR. SEARCY (presiding).—The next business in order is the address by the President of the Association, Dr. Work.

The President of the Association, Dr. Hubert Work, then read his address, "The Sociological Aspect of Insanity and Allied Defects," which was received with prolonged applause.

DR. BURR.—I move that a vote of thanks be extended to the President for his very able and interesting address. It brings to us a matter of vital importance at the present time, one which is very much discussed, and one which will probably be brought before the Association for future discussion. It is a subject that needs to be deliberated upon very carefully, and I trust it will be given the dignified and careful consideration that the question requires, especially at the hands of a body like this.

DR. BRUSH.—I have listened to many addresses before this Association, but I do not know of one that has given more subjects for thought. The President has sounded the war-cry and it behooves us to enlist in the battle which he proposes to lead us in. I am happy to second the motion.

DR. BURGESS.—Dr. Work has referred to my own work. He and I have been working on the same lines for a good many years. I know of a certain Journal that went so far as to refuse to publish an article on "Sterilization," I think it is a disgrace, and it is for us to start the ball rolling and make the rest of the men "toe the mark."

DR. HILL.—In supporting this question, I would like to make mention of the quaintness of expression and the logical utterance of the doctor. I take a great deal of pleasure in supporting this motion.

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DR. SEARCY.—I know I voice the sentiment of this Association when I thank you for this able, instructive and interesting address. I am glad you have taken the sociological standpoint. There is no theme in this country that is attracting more attention than medical sociology and the center of it is psychology and psychiatry. Human improvement rests upon an understanding of them and human deterioration is explained principally by deterioration of the psychic center. There is no more active and progressive subject for philanthropists than human deterioration. We witness it on all sides and all society is looking to such associations as ours for the solution of it.

I thank you for your address, and will the others, by a rising vote, so express themselves.

The motion was carried unanimously.

THE PRESIDENT.—I have been very greatly touched by the complimentary things said of my paper, and particularly by the sources from which they have emanated. I appreciate them very much.

On motion the meeting adjourned.

AFTERNOON SESSION.

THE PRESIDENT.—The Association will please come to order.

The first paper on the program is, "Treatment of the Insane in British Columbia," by Dr. C. E. Doherty, but as Dr. Doherty is not present, Dr. Wilson has consented to read this paper.

Dr. C. E. Doherty's paper was then read by Dr. Wilson.

THE PRESIDENT.—It is with very great regret that Dr. Doherty is not present. I have no doubt the members would have been pleased to ask him many questions, which I presume the reader of the paper would not be able to answer.

We have the honor of having with us as a guest, this afternoon, a man who needs no introduction to this Association. He is without doubt the living master of American medicine. He is also the President-elect of the American Medical Association. I induced him to visit us this afternoon on the promise that I would not ask him to make a speech, but I am sure the members of the Association will absolve me from that promise. Dr. Jacobi had an additional reason for coming; he was particularly anxious to hear the paper of his old friend, Dr. Henry M. Hurd. I will ask Dr. Jacobi to say a few words to the Association, and then I will ask him to preside while his old friend reads his paper.

DR. JACOBI.—*Mr. President and Gentlemen:* If, as your President has said, Dr. H. is not one of the members of the American Medical Associa-

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tion and will not be under my rule next week, I hope and expect that everybody else here will be. I want the American Medical Association as big and as great as it can possibly be made, and that is why I want all of you present and to be members.

In addition to what your President has said of me just now, I will add that he told me I must not speak more than two minutes. I always keep my promise, and therefore, I shall only say that I thank you for this reception, which I consider due to the fact that I happen to be the President-elect of the American Medical Association.

THE PRESIDENT.—No, no, not at all.

DR. JACOBI.—I am much obliged to you, but it should be so, and I thank you as President of the American Medical Association.

This Association of yours I have known for a good many years. I am interested, like every doctor should be, in the subjects that make up your programs from year to year. I have known of your Society a good deal through my old friend, Dr. Gray, whom some of you—perhaps not the younger men—will remember. I remember quite well how he worked and how he tried to be as scientific and exact in all his doings as possible. Some of you may remember his first attempts at photographing microscopic conditions of cells and of the brain. He was very much in need of help. At one time it was impossible for him to find a draughtsman and microscopist and finally he had to be satisfied with the services of a botanist. Some of you may remember the name of Dr. Deecke, who originally was a micro-chemist and botanist, later pathologist. For a number of years he succeeded in doing much histological work, and I think for his time, he succeeded quite well. I still possess plates of his which were quite creditable.

I wish to say one word more and that is this: I find, though your Association dates from 1844, to my mind you are a great deal younger than you were at that time in spite of your age. It is true you have gone through the same course that medicine has gone through and particularly American medicine. Fifty or sixty years ago when I began to dabble in medicine, I thought American medicine was rather old. It has become more and more young until today certainly American medicine is as young as medicine of any other country, and I am quite certain it will continue to be so. You certainly will not fail.

THE PRESIDENT.—We may say of the speaker what he has said of this Association—that instead of growing older he grows younger.

The following papers were read:

"Three-quarters of a Century of Institutional Care of the Insane in the United States," by Henry M. Hurd, M. D., Baltimore, Md. Discussed by Drs. Woodbury and Brush.

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"Immigration as a Problem in the State Care of the Insane," by James V. May, M. D., Albany, N. Y. Discussed by Hon. Goodwin Brown, Drs. Campbell, Burr, Burgess, Harrington, and Salmon.

"State Care of Boston's Insane," by Henry P. Frost, M. D., Dorchester Centre, Mass.

"Insanity Among the Indians," by Henry R. Hummer, M. D., Canton, S. Dak.

THE PRESIDENT.—I will now ask Dr. Cotton to make a report for the Executive Committee.

DR. COTTON.—I beg to report that we will have a "Smoker" tomorrow evening. I will pass this paper around and all those who wish to come will please put their names down and then we will know about how many people will attend.

THE PRESIDENT.—How much will it cost?

DR. COTTON.—The "Smoker" will be held at the Islesworth Café, and the tickets will be one dollar apiece.

Adjournment.

EVENING SESSION.

THE PRESIDENT.—The Association will please come to order. The first thing on the program this evening is a paper entitled, "Conversion," by Andrew Macphail, M. D., Montreal, Que., to be read by Dr. T. J. W. Burgess.

DR. BURGESS.—I think, perhaps, this paper should be read by title. What I mean is this: Dr. Macphail is probably, without exception, one of the brainiest men we have in Canada, and we have a good many of them. Now this paper of his if I gave it to you in full would take three hours to read. I have made an abstract that would take fifteen or twenty minutes to read, but probably it would be better to have it read by title. The idea of the paper is this: He is trying to cipher out whether conversion is a matter of instinct or intellect, and the paper is so boiled down it is hard to follow. I think if you read it in print you would appreciate it, but as to reading it in abstract, it is hard to follow.

DR. HURD.—I move it be read by title.

THE PRESIDENT.—The motion has been made, duly seconded and carried that this paper be read by title. It is so ordered, and Dr. Burgess will be excused.

The next on the program is a paper entitled, "Cortical Representation of Emotional Expression, with a Discussion of Some Points in the General

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Nervous Mechanism of Expression in its Relations to Organic Nervous Disease and Insanity," by Charles K. Mills, M. D., Philadelphia, Pa. Discussed by Dr. E. E. Southard.

This paper was followed by moving pictures illustrative of emotional expression and of a variety of phenomena in insanity and nervous disease by T. H. Weisenburg, M. D., of Philadelphia, Pa.

Adjournment.

WEDNESDAY, MAY 29, 1912, 10 A. M.

The meeting was called to order by the President.

THE PRESIDENT.—The first thing this morning is the report from the Chairman of the Committee on Affiliation with the Congress of American Physicians and Surgeons, Dr. C. R. Woodson.

DR. WOODSON.—The committee appointed by the Chair at the 1911 meeting to pass upon the resolution in regard to the severance of this Association with the Congress of American Physicians and Surgeons, will submit a majority report and a minority report, and I suggest, Sir, that you have the majority report first, of which Dr. Brush has charge, and I will submit the minority report later.

THE PRESIDENT.—Dr. Brush will you submit your report?

DR. BRUSH.—I beg to submit the following:

To the American Medico-Psychological Association: In reporting upon the matter which was referred to your committee, that is, the severance of the relations of the American Medico-Psychological Association with the Congress of American Physicians and Surgeons which meets triennially in Washington, your committee feels that some review of the facts pertaining to our relations with the Congress may be desirable. At a meeting of the American Medico-Psychological Association in Richmond, in May, 1900, the Council in its report recommended that the Association become affiliated with the Congress of American Physicians and Surgeons, and suggested that a committee of one, Dr. Brush of the present committee, be appointed to negotiate in reference to the matter and perfect the arrangements.

As the Congress did not meet again until 1903 and as there was no meeting of its Executive Committee until some time before the meeting of the Congress, the committee appointed to perfect arrangements for affiliation with the Congress was not able to report until the meeting of the Association in Washington in May, 1903. He was then able to report that all the arrangements had been made and that the meeting then being held was in connection with the Congress then in session in Washington. In

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his report he said: "It has been, perhaps, the misfortune of psychiatry that its work has, heretofore, been considered as something apart from the interests and progress of general medicine. We have, therefore, been accused of lagging behind in the march of medicine. This affiliation with the progressive men of our sister societies, men who are every one of them special workers in some one or more departments of scientific medicine will bring us somewhat more fully into view of our professional brethren, and our work, good, bad or indifferent, will be judged by a body of educated and keen critics. We will triennially be brought to what may be called a great clearing-house of medical thought. Such contact and criticism, such exchange of views and comparison of methods as we shall here have opportunity for, can but be to our advantage."

Nothing that has occurred since has altered the conditions to which attention was then called and your committee believes that our Association with the members of the special societies forming the component part of the Congress has been of benefit to members of this Association and has served to bring its work more thoroughly to the knowledge of the physicians of the country. The needs and advantages are, we believe, even more obvious than when the affiliation was entered into.

There has been in the past too much of a tendency on the part of physicians connected with hospitals for the insane, to be isolated from association with fellow members of the profession engaged in other special lines of work, and this has resulted in the view being taken by many members of the profession that no real medical work of value is being done in hospitals for the insane, and that the medical officers of these institutions are merely the keepers of large boarding houses for mental cases, who satisfy themselves with throwing the protection of the institution around those in their charge without doing anything to really advance the cause of scientific medicine or for the prevention or treatment of insanity. Nothing can do more to overcome this mistaken view than occasional opportunities for those who in the past have been disposed to be our critics to meet with us to hear our papers which are read and the discussions which are called forth and to observe that in fact as much is being done in psychiatry as in any other department of medical study and practice. The members of our Association are also given an opportunity to see something of the work of other organized medical bodies, and, perhaps, with equal benefit, to meet personally and compare notes with many of their members.

The difficulties which have arisen in regard to our Association with the Congress seem to have been largely of a financial nature and have grown out of the large assessments which have been laid upon this Association because of its size, to pay the expenses of the Congress. It has been a rule of the Executive Committee, which has in its hands the government and direction of the Congress to assess each association pro rata, and our Association having a larger number of members, Active and Associate, than any other of the component societies of the Congress, has had a larger burden of the expense to bear. The assessment comes, however,

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only every third year, and adds nothing to the dues of each member of this Association, who, nevertheless, receives a volume of the Transactions of the Congress, which is of considerable value; the last one issued being a volume of over 450 pages.

The last assessment which was made took into consideration in the enumeration of the members, not only the Active members in the Association, but the Associate as well, and I am informed that the Executive Committee of the Congress recognizes that this was an error and that in the future arrangements will be made by which this body will only be assessed in proportion to the Active members.

The Congress meets next year and the committee recommends that we continue our affiliation, and that our members on the Executive Committee of the Congress both Active and Alternate, be instructed to endeavor to make arrangements by which the Association shall be relieved, if possible, of some of the expense of the Congress which has, heretofore, fallen upon us, which we are assured can be done.

When we have met with the Congress our meetings have been more generally attended than have the meetings which have been held at any other place, with the possible exception of the meeting in 1907, the second time we met with the Congress, but as part of this meeting was held at Washington and part at the Jamestown Exposition many members refrained from attending.

Respectfully submitted,

WILLIAM L. RUSSELL,
EDWARD N. BRUSH.

THE PRESIDENT.—Dr. Woodson will now present the minority report of this Committee.

DR. WOODSON.—I desire to present the following report:

To the Officers and Members of the American Medico-Psychological Association: Gentlemen.—At the meeting of this Association in Denver, in 1911, the following resolution was offered by Dr. T. J. W. Burgess:

"*Resolved,* That it is in the best interests of the American Medico-Psychological Association that it should sever its connection with the Congress of American Physicians and Surgeons, and that the Secretary be instructed to give notice to the Congress that it has decided to that effect."

The following Committee: C. R. Woodson, Edward N. Brush and William L. Russell, were appointed to make report on said resolution.

I hereby recommend that the resolution be adopted, and submit this as a minority report.

C. R. WOODSON, *Chairman.*

DR. WOODSON.—*Mr. President, and Gentlemen of the Association.*—In substantiation of this resolution I desire to say that I think the time has come when the American Medico-Psychological Association can stand without bolstering. I do not believe it is necessary to have props from the Congress of American Physicians and Surgeons, to see that we are keeping

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apace with the times. I do not believe it is necessary for us to say that we are not competent to stand alone; that we are not progressing and that we are not making the advances that our brothers of the sister branches are making, when it has been so plainly shown by our president that 65% of the people who go to the state hospitals for the insane are idiotic, imbecile, defective or due to heredity. If the surgeons had to contend with 65% of incurable cases they perhaps would have some occasion to reflect these views if they were disposed to do so. The fact that we have the largest representation in the Congress of American Physicians and Surgeons, and pay, if I mistake not, almost one-third of the expenses of the Congress and derive no benefit therefrom, I do not believe that is fair. Again, we are an organization composed of members representing every state in the American union, and I understand every province in Canada. Such being the case, at least many of us are not disposed to want to assemble at Washington, D. C., every third year. This is a feature that has given its members much pleasure and comfort—visiting in every part of the country; in New York, Boston, Detroit, San Francisco and other places, and there is no reason why we should go back to Washington every third year. And again, if we sever our connection with this most worthy organization, or if by arrangement or pre-arrangement we can meet here in this city with the American Medical Association, we certainly ought to command as much respect for being members of the American Medical Association and participating in that representative body, as to continue our membership in the Congress of American Physicians and Surgeons. If by a pre-arrangement this society will so arrange, we can meet the week after it meets and thus save one-third of the railroad transportation, which, for some of us, is no small matter. If by the same arrangement we meet in the same city we can get a reduction in hotel rates, and the benefits to be derived would be far better at the hands of the A. M. A. than by affiliation with the Congress of American Physicians and Surgeons. I think the time has come for this organization to assert its individuality. We can all look back and see that it was not long ago when surgeons operated without antiseptics, and we are no more blamable for not curing incurable insanity than the surgeon is for not curing a case of sarcoma in advanced states.

THE PRESIDENT.—Please allow me to say that I will limit the discussions on this resolution to five minutes unless the Association advises otherwise.

This question has become involved and, perhaps, it would be well to attempt to straighten it out. A year ago, in Denver, Dr. Burgess offered this resolution which has just been read. Subsequent to the offering of this resolution a committee of three was appointed to go into the matter and report at this meeting. The committee has gone over the matter and submits a majority and a minority report, a part of the latter being the Burgess resolution. Now the Chair rules that the Burgess resolution must be presented and acted upon independently of the committee report, and it also rules, as the Burgess resolution antedates this committee, that the Burgess resolution shall be acted upon first, and then the two reports

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of the committee will be taken up and acted upon. Is that satisfactory to the convention?

It was moved and duly seconded that the resolution be adopted.

THE PRESIDENT.—The motion has been made and seconded that the Burgess resolution be adopted, now this resolution is before the Association for discussion.

DR. BURGESS.—Most of you know that I was opposed to our joining the Congress, and I have objected to it ever since as detrimental to the best interests of our Association. I have attended every meeting since our affiliation with the Congress, and I have failed on every occasion to see that we have gained one single atom of benefit thereby. I do not know what Dr. Brush will advance on this point, but I certainly am one with Dr. Woodson in thinking we are big enough to stand alone.

Now as to the drawbacks resulting from the union. In the first place, as long as we are connected with the Congress we are tied down to meet in Washington every third year. To this I strongly object. Were the Congress such that we met once in ten years, I would say all right, but to meet at Washington every third year is too much of a good thing, even as regards so beautiful a city, as is your capital. In the second place, meeting with the Congress, my experience has been that we lose our identity. As I have said I have attended every meeting since the affiliation and I fail to remember any members of the many other sections who have been present at our meetings, while many of our members leave us to hear papers read by personal friends in other sections. In other words we show an interest in branches of medicine other than our own, while they show little or none in ours. Next as regards some of the financial disadvantages we suffer under owing to this union. Every Congress I have attended I have given up $5, but have never yet been favored with a volume of its Transactions. I do not object to that at all. I have paid my mite voluntarily and willingly for the credit of our own Association. In addition, however, we had, according to the report submitted by our Secretary, to pay $423 out of a total of about $1400, the expense of the last Congress, as our proportion. Is this fair when there are about twelve or fourteen sections which go to make up the Congress? The opponents to my resolution say we will come to some arrangement whereby we will not be taxed so highly. It may be so, but even in that case I think we are better off apart.

DR. CAREY.—The statement has been made that we gain considerably from this affiliation with the Congress. If my memory serves me right, I have been a member for seven years, and I have yet to receive a single line of any report from the Congress. I sent in my name and my money, but I have never received any reports, whatever, of their transactions.

DR. BRUSH.—I have a letter here from the Secretary, in which he says that the volume of Transactions is sent to every member of the Congress, Associate and Active.

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DR. BURR.—The step contemplated by the resolution is, to my mind, distinctly retrogessive, and I am heartily opposed to taking it. A few years ago this Association moved heaven and earth to get into the Congress, and now it is moving heaven and a portion of the cosmos to separate itself from this affiliation. I yield to no man in loyalty to the American Medical Association. I am as fond of it as is Dr. Woodson, but there is other medical company in which this Association may move with profit. The membership of the Congress represents the very best in American medicine. Relations with the American Medical Association are to our advantage, and affiliation with the Congress is distinctly an uplift and benefit to this Association. There has apparently been in some quarters in the past, disposition to relegate this body to non-medical company. If such a disposition is still in existence, Heaven forbid that we should be a party to reading ourselves out of good medical company. I am thoroughly opposed to the adoption of the resolution.

DR. C. G. HILL.—I do not see that the resolution before the house will interfere with any of us being members of the American Medical Association. I suppose we can retain our membership there. I do not see any particular advantage in this affiliation with the Congress. I am sure that the fact of our having joined and now wishing to sever our connection with that body is a perfectly natural course. We joined them for the purpose of gaining advantages, but we seem to derive no advantage, whatever, from this association. We are bound down to certain restrictions and when we meet together in Washington a third of our meeting is practically spoiled. We lose our identity, as it were, and the advantages to be derived from our own meeting. Go to Washington if you choose, and to other places; the matter of expense I do not say amounts to a great deal. but there is nothing to be gained by association with this body, and to my mind, we have nothing to congratulate ourselves upon in this affiliation. I am, therefore, opposed to it and I hope the resolution will go through.

DR. HENRY M. HURD.—In considering this question we should not depart from the position which we took when joining the Congress of American Physicians and Surgeons. We had no thought that the Congress would bolster us up; we simply desired to affiliate ourselves with a prominent body of medical men of the United States and Canada. We could not merge our Association with the American Medical Association; that policy had been considered by our Association many years ago. Before many of our present members joined this Association an effort had been made by the American Medical Association to induce our Association to give up its identity and become a branch of that Association. The matter was discussed and an effort was made for several years to secure such an affiliation, but the members of our Association wisely refused to give up their identity and become members of a section of the American Medical Association. What has happened? We have always been under the ban of the American Medical Association; it has always insisted that as

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administrators, we meet together; that we are simply keeping institutions for the insane; that we are bookkeepers and purchasing agents, stewards and farmers, but not physicians. As an Association we later welcomed the opportunity to affiliate with, not to join or to lose our identity, twelve of the most progressive national medical societies in the country. We joined the Congress as equals, not as satelites, and without in any way losing our identity. By joining the Congress we did much to make our Association better known to the different medical associations of the country. I remember an extremely distinguished medical man who, after a meeting in Washington, said, "I am surprised and delighted to see so active and progressive a class of men as are connected with the American Medico-Psychological Association. We have great difficulty in keeping our men together two days, but after the Congress had adjourned and every one had departed, I found the members of the American Medico-Psychological Association conscientiously completing their program."

We cannot afford to shut ourselves away from other kindred societies. Members of other societies do come to our meetings, and members of our society go to meetings of other societies and all of us have the opportunity of attending the general sessions of the Congress. We belong to the Congress precisely as the other societies, and have had papers presented at the general sessions by our own members which have attracted much attention. I believe that it will be a great mistake to sever this connection. Of course the consideration of the cost of membership is a small matter. No one feels that the amount of our assessment to publish the triennial volume of Transactions is of any great importance. How many of us are the poorer for it?

Dr. Brush.—I am not an orator like our friend Dr. Woodson, or Dr. Burgess, but I have paid some attention to this matter. The American Society of Physiologists did sever its connection because it was a special society, not interested in other departments of medicine, but alone interested in physiology. It is a small society and if it gained nothing, it contributed little to the Congress. Personally, I shall not lose anything if the Association severs its connection with the Congress. I have been a member of the Congress from its beginning by reason of membership of another organization. I have received all the volumes of the Transactions, and any member who did not receive the last volume can get it by writing to the Secretary. No one has intimated, or has intended to intimate, that we are not progressive; what has been intimated is, that those who do not know what we do, who do not know of the medical work done in the hospitals, have intimated that we are not progressive. I am old enough to remember and to have lived and taken a small part in, and therefore, know something of the changes which have gone over the medical side of hospitals for the insane. I say it, and I say it without shame, there was a time when the criticism of institutions for the insane was somewhat harsh, and to some extent deserved; that criticism is not made to-day by those who know of the work done in the hospitals for the insane.

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Dr. Hurd has referred to the action of the American Medical Association. Whether it was pique because we did not dissolve ourselves and merge ourselves in the section on psychology, I do not know, but probably every member of this body is also a member of the American Medical Association. Let him look over the officers of that Association and see how often a member of this Association has been honored by an office as Chairman, Secretary or Vice-Chairman, or anything else, with the section of Mental and Nervous Diseases of the American Medical Association. They do not know anything about us. The latest volume of their Medical Directory, which is supposed to contain a list of all the special and medical societies of the country, is scandalously silent as far as the American Medico-Psychological Association is concerned—it is not known to the Association. If we come here to this meeting this week in advance of the American Medical Association and remain so as to take part in its meetings, it involves our being away from our work at least two weeks, and then if we have a vacation later we must face the fact that we have already been away two weeks, if not longer. As far as the meeting in Washington is concerned, every three years, it attracts a larger number of members than any meeting anywhere else does; it always has and I think always will. Personally, I shall stand by whatever action the Association takes. I am loyal to the organization; I have no personal feeling whatever, but I hope we will go slowly; that we do not now sever our connection, but wait until next year and see what is done. I cannot think we have been paying a quarter of the expenses of the Association. I hope that the resolution will not be adopted.

Dr. Blumer.—I arrived in the hall rather late and only in time to see Dr. Woodson from a distance in action, for he had finished his remarks before I reached this part of the room, but I was not too late to hear what Dr. Burgess had to say. The argument of the member from Montreal is probably the argument of Dr. Woodson, and when I heard what he had to say I recalled a remark which Professor Jowett, of Oxford, once made on a somewhat similar occasion. He said: "Gentlemen, all my illusions are gone; there is not one left, not even the Archbishop of Canterbury." I confess I cannot see how in the world we can lose our identity by being affiliated with the Congress any more than the various other societies lose their identity by being connected with that body. It is very interesting to me, as a psychological phenomenon, that when a distinguished candidate for the Presidency has been saying "I won't" when he meant "I will," and "I will," when he meant "I won't," we exhibit the same indecision and shiftiness, finding all sorts of excuses for severing our connection with a body which we were so eager to join a few years ago. If there were no other reason, we have a sufficient one for retaining the connection in the fact that the Congress is a clearing-house of medical thought, of which it were well for us to remain members for our own good. I hope, therefore, that we shall continue to have the privilege of associating ourselves with our sister specialists, and that we shall always lay the accent upon the fact that we are above all things physicians, and not mere administrative officers.

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DR. WOODSON.—I have no desire to impress upon this body the feeling that I was in favor of doing away with the American Congress and taking up the American Medical Association. I am a member of the A. M. A. I think I can remain a member of the Congress if I so desire, but I do believe that every third year we completely lose our identity in going to Washington, and I am afraid if we keep it up we will follow in the steps of our time honored friends referred to by Dr. Hurd; that we will not settle down to work closely to the end of the session, but we will get in the habit of running about and having empty halls. A busy man wants to get the best he can and there is no reason why we cannot hear any of these men if we come to the meeting of the A. M. A. If we have the two meetings at the same place one week ahead or one week later, we get the benefit of very greatly reduced rates.

THE PRESIDENT.—The motion before the house is that this Association sever its connection with the Congress of American Physicians and Surgeons. Are you ready for the question?

A rising vote was taken on the motion, the Secretary counting.

THE PRESIDENT.—The Secretary informs me that the vote on the motion is forty in favor and thirty-five opposed. The Burgess resolution is, therefore, pronounced as carried, and the association, heretofore existing, is dissolved.

DR. BRUSH.—I move that the Secretary be instructed to inform the Congress of American Physicians and Surgeons to that effect.

Carried.

THE PRESIDENT.—The report of the Council is the next order of business.

REPORT OF COUNCIL, MAY 28, 1912.

The Council recommends that the following named physicians be elected to Associate membership: William M. Dobson, M. D., Boston, Mass.; Dora W. Faxon, M. D., Taunton, Mass.; Mary E. Gill, M. D., Dorchester Centre, Mass.; Ermy C. Noble, M. D., Dorchester Centre, Mass.; Cyril G. Richards, M. D., Dorchester Centre, Mass.; Joseph H. Toomey, M. D., Dorchester Centre, Mass.; Stephen E. Vosburgh, M. D., Boston, Mass.; John I. Wiseman, M. D., Dorchester Centre, Mass.

The Council has received the following applications for Active membership. In accordance with the constitution, final consideration of these will be deferred until next year: S. Grover Burnett, M. D., Kansas City, Mo.; R. H. Parsons, M. D., Mt. Holly, N. J.; Harry O. Spalding, M. D., Westborough, Mass.

On motion, duly seconded, the report of the Council was accepted and adopted.

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THE PRESIDENT.—The next in order is the election and transfer of members as proposed yesterday. The Secretary will read the names.

(This list is given on pages 203-204.)

DR. WOODSON.—I move that the Secretary be instructed to cast the ballot of the Association for the election and transfer of members as recommended by the Council yesterday.

Motion was duly seconded and carried.

THE PRESIDENT.—The Secretary has cast the ballot of the Association and the members are duly elected and transferred as recommended.

DR. BRUSH.—Under unfinished business it is proper for the committee to report, that was appointed at the meeting at Washington, in connection with a resolution called forth by the address of Dr. Drewry. The committee was appointed to report on legislation, new laws, system of care and supervision of the insane. The committee made a tentative report of progress, but owing to the fact that this work would require a large amount of correspondence, we asked in this preliminary report whether the Association desired to incur the necessary expense, and if so, would it make the necessary appropriation. This report was forwarded to Denver, but was lost and has never been acted upon and never been followed up. The committee is still in existence and has never been discharged. I would, therefore, ask that the committee be instructed or discharged.

THE PRESIDENT.—I would like to ask what would be the probable expense of the committee.

DR. BRUSH.—It is hard to say. The idea was to find out what new laws have been enacted, what new methods are in use. That will necessitate a great deal of correspondence. I, personally, do not see that anything can be accomplished by it. Each state in the union and each province in Canada acts independently. It would seem to me well that this committee be discharged, and I move that this committee be discharged.

This motion unanimously prevailed.

THE PRESIDENT.—The present committee on this question is duly discharged.

Any other unfinished business?

DR. EDWARD N. BRUSH.—I wish to say that during the discussion yesterday in regard to the restriction of the admission of undesirable immigrants to this country, it was suggested by the President that some action be taken by the Association, and at his request I have prepared the following resolution, which I beg to offer:

Resolved, That a committee of five members of this Association be appointed by the President to consider what action should be taken by this Association to secure more effective administrative and legislative measures

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for excluding insane and mentally defective immigrants, and for the humane deportation of aliens who become a public charge in our institutions for the insane; such committee to report at this meeting.

DR. HURD.—I move the resolution be accepted and adopted.

Dr. Hurd's motion was duly seconded and carried.

DR. FRANK WOODBURY.—I would ask that the President make a ruling in regard to this resolution so that the words "institutions for the insane" shall include public institutions for feeble-minded.

THE PRESIDENT.—The Chair so rules.

THE PRESIDENT.—We are ready for the report of the Nominating Committee, Dr. Pilgrim.

DR. PILGRIM.—Your Nominating Committee reports as follows: For President, James T. Searcy, M. D., Tuscaloosa, Ala.; for Vice-President, Carlos F. Macdonald, M. D., New York, N. Y.; for Secretary and Treasurer, Charles G. Wagner, M. D., Binghamton, N. Y.; for Councilors, Henry M. Hurd, M. D., Baltimore, Md.; James V. May, M. D., Albany, N. Y.; M. L. Perry, M. D., Parsons, Kans.; T. J. W. Burgess, M. D., Montreal, Canada; for Auditor, Maurice C. Ashley, M. D., Middletown, N. Y.

DR. BURR.—I move the report be accepted, adopted, and the Secretary be instructed to cast the ballot of the Association for the election of the officers named by the Nominating Committee.

DR. BLUMER.—Seconded.

Motion was unanimously carried.

THE PRESIDENT.—The Secretary announces that the ballot has been cast. These gentlemen are elected as officers of the Association for the ensuing year.

The next in order is the report of the Auditors, Dr. Smith.

DR. SMITH.—I beg to report that I have examined the books and vouchers of the Secretary and Treasurer, and compared his records with the report submitted to the Association, and found everything correct. The same is true of the report submitted by the Editors of the AMERICAN JOURNAL OF INSANITY.

DR. CAREY.—I move the report of the Auditors be accepted and adopted.

Which motion was duly seconded and carried.

THE PRESIDENT.—As it is impossible to adjust the lights satisfactorily for Dr. Cotton's paper, which is illustrated by lantern slides, this paper will be postponed until the evening session.

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The following papers were read:

"The Jury Commitment Law of Illinois, 1865-1893 (achievement of Mrs. Packard), and Later Developments in Lunacy Commitment," by Richard Dewey, M. D., Wauwatosa, Wis. Discussed by Dr. Henry M. Hurd, Dr. Gorst, Dr. Hill, Dr. Moody, Dr. Woodson, Dr. Evans, Dr. MacDonald, and Dr. Russell.

"Three Months Without and Three Months With a Social Service Worker at the Mental Clinic of the Boston Dispensary," by L. Vernon Briggs, M. D., Boston, Mass. Discussed by Dr. Brush, Dr. Southard, Dr. Houston, Dr. Cotton, and Dr. Briggs.

THE PRESIDENT.—If the value of a paper depends upon the discussion elicited, Dr. Dewey's paper is an exceedingly valuable one.

The Chair appoints the following Committee on Immigration, as provided for in Dr. Brush's resolution: Dr. Edward N. Brush, of Maryland; Dr. James V. May, of New York; Dr. C. B. Burr, of Michigan; Dr. Owen Copp, of Pennsylvania; Dr. T. J. W. Burgess, of Canada.

This committee will officer itself.

The Industrial Exhibit is now open for inspection in the south lobby, and you will be well paid by visiting it.

THE PRESIDENT.—As the Committee on Resolutions, I will name the following: Dr. G. Alder Blumer, Providence, R. I.; Dr. B. M. Caples, Waukesha, Wis.; Dr. Charles G. Hill, Baltimore, Md.

THE PRESIDENT.—Dr. Hoch has asked to have his paper deferred until tomorrow.

Adjournment.

AFTERNOON SESSION.

THE PRESIDENT.—The Association will please come to order.

The following papers were read:

"Problems Presented by a Series of One Thousand Autopsies in Cases of Mental Disease," by E. E. Southard, M. D., Boston, Mass. Discussed by Dr. Cotton and Dr. Southard.

"Some Psychological Observations in the Study of the Insane," by Max E. Witte, M. D., Clarinda, Ia. Discussed by Dr. Woodbury, Dr. Burr, and Dr. Witte.

"Water," by Charles G. Hill, M. D., Baltimore, Md. Discussed by Dr. Searcy and Dr. Moody.

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THE PRESIDENT.—The committee appointed today on immigration, desires to meet here immediately after the session closes, and they request that all interested in, or having any suggestions bearing on this subject, will meet with them.

The Council will meet immediately at the close of this session.

Adjournment.

EVENING SESSION.

The President, Dr. Work, introduced Hon. Herbert P. Bissell, of Buffalo, N. Y., State Hospital Commissioner for the State of New York, as the speaker of the evening. Mr. Bissell then delivered his address, "A Layman's View of the Care and Treatment of the Insane in the State Hospitals of the State of New York," which was greeted with applause. At the conclusion Dr. Work thanked Mr. Bissell, on behalf of the Association, for his address.

Dr. Henry A. Cotton, of Trenton, N. J., read a paper entitled: "The Fatty Degeneration of the Nervous Elements of the Cortex in the Various Mental diseases." (Illustrated by lantern slides.)

THE PRESIDENT.—The meeting is adjourned.

THURSDAY, MAY 30, 1912, 10 A. M.

THE PRESIDENT.—The Association will please come to order. We will have the report of the Council.

REPORT OF COUNCIL, MAY 29, 1912.

The Council recommends that the following named physicians be elected to Associate membership: Jessie Peterson, M. D., Norristown, Pa.; Marion O'Harrow, M. D., Philadelphia, Pa.; Albert C. Buckley, M. D., Philadelphia, Pa.

The Council has received the following applications for Active membership. In accordance with the constitution, final consideration of these will be deferred until next year: T. B. Bass, M. D., Abilene, Tex.; H. Walton Wood, M. D., Brookline, Mass.; Arthur P. Hasking, M. D., Jersey City, N. J.; H. V. A. Smith, M. D., Jersey City, N. J.

Respectfully submitted,
CHARLES G. WAGNER, *Secretary.*

On motion the report of the Council was accepted and adopted.

THE PRESIDENT.— The next order of business is the election of the candidates proposed by the Council yesterday. The Secretary will read the names.

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The Secretary read the following: William M. Dobson, M. D., Boston, Mass.; Dora W. Faxon, M. D., Taunton, Mass.; Mary E. Gill, M. D., Dorchester Centre, Mass.; Ermy C. Noble, M. D., Dorchester Centre, Mass.; Cyril G. Richards, M. D., Dorchester Centre, Mass.; Joseph H. Toomey, M. D., Dorchester Centre, Mass.; Stephen E. Vosburgh, M. D., Boston, Mass.; John I. Wiseman, M. D., Dorchester Centre, Mass.

On motion, duly seconded, the Secretary was directed to cast the ballot of the Association electing these candidates as members of the Association.

THE PRESIDENT.—The Secretary announces that the ballot has been cast, and these physicians are elected members of the Association.

THE PRESIDENT.—We will now listen to the report of the Committee on Immigration.

DR. BRUSH.—When we recall the paper of Dr. May and the discussion which it brought forth, I think it is evident that there has been no more important matter brought before the Association since its organization. The committee has considered the subject with as much care as time would permit. We have had the benefit of advice from several of our members, from Dr. Salmon, Dr. Campbell, Mr. Elwood, Mr. Goodwin Brown and others, and beg leave to present the following:

WHEREAS, The American Medico-Psychological Association, an organization representing all parts of the United States and Canada, whose members are engaged in the care and treatment of the insane and in the study of all questions involved in the care and treatment of insanity and mental defect, has for one of its chief purposes the conservation of the mental health of the whole country and the prevention of insanity and other forms of mental defect and disturbance; and

WHEREAS, The entry of a large number of insane and mentally defective immigrants is a menace to the mental health of the country in this and succeeding generations, and tends to produce lower standards of care by greatly overtaxing the resources of our public institutions, thus adding to the difficulties of a problem already a serious one; and

WHEREAS, The Federal statutes, based upon the right premise that countries as well as individuals should not evade their own responsibilities, provide for the exclusion of insane and mentally defective immigrants; and

WHEREAS, It is more humane as well as more effective to reject insane and mentally defective immigrants at the time of their arrival, than to deport them after they have gained a residence in this country and brought their families here; and

WHEREAS, It has been shown that the facilities for the mental examination of arriving immigrants are inadequate, and that the safeguards for the humane care of those deported, while in transit, are insufficient; therefore, be it

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Resolved, By the American Medico-Psychological Association that Congress be urged to provide for the mental examination of arriving immigrants by physicians in the United States Public Health and Marine Hospital Service, trained in the diagnosis of insanity and mental defect, and to provide for adequate facilities for the detention and examination of immigrants in whom insanity or mental defect is suspected and for the safe and humane return to their homes of those whom it is necessary to exclude, and further

Resolved, That aliens who have been permitted entrance to the country who become insane or show any mental defect within at least three years after landing should be deported unless it shall be shown conclusively that such insanity or mental defect has resulted from causes arising since the landing of said aliens, and that the question of such insanity or mental defect, as well as of insanity or mental defect in aliens seeking to land, should be authoritatively decided by physicians of experience and training in psychiatry, who, in sufficient number, should be employed at all ports or places of entry for immigrants, and that all questions of fact or opinion involved should be governed and decided solely by the teachings of modern psychiatry, especially as regards the cause or causes of insanity or mental defect in any alien whom it is desired to deport, and be it further

Resolved, That the barbarous custom of deporting insane or mentally defective aliens without accompanying nurses or qualified attendants, of his or her own sex and of experience in caring for such cases, is a reflection upon the intelligence and humanity of the country and should at once be discontinued.

Resolved, Also, that the fine imposed upon transportation lines for bringing mentally defective immigrants into the country is inadequate and should be at least twice the amount now imposed, and that the same fine should be imposed for bringing insane immigrants into the country, and

Resolved, That these resolutions be duly authenticated by the President and Secretary of the Association, and with its seal and forwarded to the proper committees of the Senate and House of Representatives of the United States, and to the Secretary of Commerce and Labor and the Surgeon-General of the United States Public Health and Marine Hospital Service.

EDWARD N. BRUSH, Maryland, C. B. BURR, Michigan,
OWEN COPP, Pennsylvania, JAMES V. MAY, New York,
T. J. W. BURGESS, Canada.

DR. BRUSH.—I feel myself wholly inadequate to discuss this question, but there are gentlemen in this room who have had experience in this matter, and I hope the subject will be thrown open for discussion to every one present. The committee has endeavored to put emphasis upon the medical aspect of this question, for it is strictly a medical one in its inception, that is, when the question of the mental status of the individual in question is considered. I understand that certain cases have been admitted, notwithstanding the opinion of the medical men at the port of

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entry, by a strictly legal opinion, or rather the opinion of the law department of the Government. No ruling based on anything which excludes medical opinion, by competent men, should be made.

THE PRESIDENT.—You have heard the report of this committee, and the Chair will be very glad to entertain a motion to receive, accept and adopt this report as the sense of the Association.

DR. CAREY.—I move that the report of the Committee on Immigration be received, accepted and adopted, as the sense of this Association.

Seconded by Dr. Woodson.

THE PRESIDENT.—Motion has been made and seconded that the report of the Committee on Immigration be received, accepted and adopted. The subject is now open for discussion.

DR. HERBERT B. HOWARD.—When this committee was appointed yesterday it seemed to me that it had a pretty large subject to cover and get a report in today. It happens that I have been so situated for the last twenty-five years that I have come in fairly close contact with the deporting of the insane. I wish to state that after listening to this report, it shows that somebody has studied that subject carefully; that somebody helped to get up that report that had considered it before yesterday. I think it is well covered. I have taken pains when I have been crossing the Atlantic, to go down and see how those that we send across the Atlantic were being cared for, and I must admit that I have been rather ashamed to see how we return our insane to their homes. I have felt at times that we ought to be willing to pay for the keeping of them here unless we were willing to pay well in order to get them back in better shape. This is a subject for discussion. Within a few years we have got to take greater pains to see that these attendants who accompany the patients get them to their homes. There are countries where they will not allow them to enter. In Russia the law prohibits them to cross the borders. We send them back to their homes, but no one ever knows what becomes of them, as they have to be smuggled across the Russian border. Now, it so happens that the laws, or rather the customs, have been marvelously changed within the last decade, so that we are quite humane in interchanging between some of our states and getting patients to their own homes, and I think that this resolution may be one great step toward handling this subject, which is a difficult one, but there are many difficulties that we do not get at in this resolution. I think this is one great step not only toward educating the public, but toward educating our own members. Lots of them do not really understand the difficulties and what the patients undergo when they are sent across the Atlantic. I hope these resolutions will pass.

DR. WOODSON.—I think this motion ought to be amended so as to authorize Dr. Brush and his committee, or that part of it which is in close proximity to Washington, to present this report to committees on immigration or deportation, of both Houses of Congress.

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DR. CAREY.—It is my understanding that the adoption of the resolution carried that with it.

THE PRESIDENT.—It is the opinion of the Chair that unlimited power is given to that committee; that the whole matter can safely be trusted to their judgment, and if they do not take up these matters that are so important, we will see that they are discharged. I do not think it is wise to make too many suggestions or place any restrictions. The Chair is pleased to have its judgment complimented in the selection of the committee, by the first speaker.

Any further discussion?

DR. GEORGE B. CAMPBELL.—In New York some months ago we met with a very severe set-back in the form of a decision of the Solicitor and concurred in by Attorney-General Wickersham, which involved the case of a feeble-minded girl 17 years of age, who came to this country less than a year ago. She was subject to attacks of excitement. The case was certified to by a member of our Bureau on the grounds that the constitutional tendency was mental deficiency, and that it existed prior to her landing in this country. The Secretary of Commerce and Labor held that this statement was not sufficient evidence to show that the insanity existed prior to her landing here.

Briefly it might be well to tell you of the methods that we employ in certifying to our cases. The Bureau of Deportation usually sees a case at the reception hospital, very frequently at their homes. A careful history is taken of the case, and then after a commitment to one of our state institutions, a copy of the hospital history is also submitted to us, and with that we compile a medical certificate, provided that we are positive of our ground of insanity, or that the cause of insanity existed prior to landing. This certificate is reviewed by a medical officer at Ellis Island, and although very frequently our certificates are confirmed by the examiner at Ellis Island, often we have had them rejected at Washington.

THE PRESIDENT.—Commissioner Bissell, the orator of last night, is in the room and I am pleased to extend the privileges of the floor to him if he will speak to us for a few moments and give us the pleasure of hearing from him again. (Applause.)

HON. HERBERT P. BISSELL.—*Mr. President and Gentlemen:* I am very glad, indeed, to add just a word to this discussion because the State Commission in Lunacy of the State of New York, has taken the deepest interest in this subject during the past year. It has employed an able attorney, who was formerly a member of the Commission, Hon. Goodwin Brown, to give his attention to the subject. Mr. Brown has been in attendance before committees of Congress. We have given a great deal of time, as shown by the good paper read by Dr. May, to the collection of the facts by the Bureau of Statistics in our department, and the preparation of arguments that we think will be effective in securing the exclusion of

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the alien insane, and the deportation of them by the United States Government at their expense. What we want to do is to save all the other states as well as the State of New York, from this terrible burden of expense. The burden upon the State of New York amounts to twenty-five millions of dollars. Only a few months ago we decided it would be wise to start a campaign and prepare a communication to the Governor of the State of New York. This was prepared by the Commission and sent to the Governor, requesting that he appoint a commissioner who would make investigation in our state hospitals. The Governor has appointed such a commissioner, who will go about and see the superintendents of the state hospitals and the Commissioners in Lunacy in several states, and will make a general report to our Governor and to the next Legislature. It is evident that there is nothing any of us can do for the purpose of economy that is more important than to carry on this excellent work, and we are endeavoring to help it in every way possible through the Bureau of Deportation, of which Dr. Campbell, who has just spoken to you, is the Chief Medical Examiner. Commissioner Williams is of great assistance to our department as well as to the National Government, in the exclusion of the physically and mentally defective aliens who have been loaded on this unfortunate country in the past, and we are going to stand behind him. We have had several conferences with the Secretary of Commerce and Labor on this subject, and we find that there sometimes is politics connected with it. There are lots of organizations that want to let in all of these unfortunate people. We feel very sorry for them, but we do not propose to have the State of New York take care of them any longer. If the National Government desires to admit them, we will tell them that they must build their own hospitals and take care of them without help from the State of New York, and if we do take care of them we will insist that we are paid for the expense of caring for them. I am delighted that this subject has come up in this splendid way, and I hope these resolutions will be adopted unanimously. I thank you.

Dr. E. Stanley Abbot.—It may interest the Association to know that there is a reflex to this problem. One of the recent Italian Journals contained a report of a meeting held in Naples, at which measures were taken to provide for the Italian insane that were returned to Italy from the United States and dumped in Naples, crowding the local hospitals, instead of being sent to their respective homes. I could not help but feel ashamed of our country, that the methods we have, heretofore, used for returning these patients were such as to call for such action on the part of the Italian Psychiatric Society.

Dr. Salmon.—There is one matter covered by the resolutions about which I would like to say a few words; that is the methods employed in deportation. Until 1907, all insane immigrants were deported, without regard to their condition, by the first returning vessel available and aliens for whom warrants had been issued by the Department of Commerce and

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Labor were deported to the port at which they had embarked; their return to their own homes depending upon the humanity or good-nature of the transportation companies.

It was apparent that, under these conditions, many insane aliens were not reaching their homes and complaints received led the New York State Charities' Aid Association to investigate the matter. This investigation showed that some such aliens were never heard from by their friends and relatives after they had left New York and that others had suffered from ill-treatment or neglect during the voyage. It became necessary to take some action and so the immigration law was amended at the instance of the State Charities' Aid Association in 1907. The amendment provided that when the chief medical officer of a hospital or a medical officer of the Public Health and Marine-Hospital Service certified that an insane alien was not in condition to attempt the journey alone, such insane alien should be accompanied by an attendant. This was done for about six months, but then the steamship companies decided that the care provided was costing too much and they protested against the law, wholly upon the grounds that it was "too expensive."

A conference was called in Washington and the steamship companies, having received ample notice, were represented. Mr. Homer Folks, representing the State Charities' Aid Association, was given too short notice to enable him to be present.

At that conference it was decided that the intent of the law would be carried out by having a paper in four parts accompany deported insane persons. The first part of this paper was to be signed by the Commissioner of Immigration, stating the alien's condition. The second part was to be an acknowledgment on the part of the transportation company of the receipt of the alien. The third part was to be a statement by the master of the vessel regarding the care given on the voyage and a receipt by the European forwarding agent. The fourth part was to be signed by the relatives of the alien or the proper authorities acknowledging the receipt of the alien in his home.

After this change in the method of deportation it soon became apparent that old conditions were returning, complaints were received again and it was ascertained that the authorities at Ellis Island did not know whether insane aliens reached home in safety or not unless specific complaints led to investigation.

It is now proposed to change the section of the immigration law so that the Secretary of Commerce and Labor *shall be obliged* to provide competent attendants when needed and that the expense shall be borne by this Government. This looks very much like surrendering to the steamship companies, but it is not. The Government has tried to penalize the steamship companies and the steamship companies have tried to evade their duties under the law and, in the whole controversy, the welfare of the immigrant has not been considered.

I think that very few people who travel first-class have such an opportunity as Dr. Howard had of seeing the actual conditions under which these

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insane aliens are deported. It may not be known that the Navigation Act of 1883 provides for the care of all classes of sick passengers in proper hospital accommodations. Whether an insane alien is or is not a sick person is decided by the ship's officials. I have seen the decision made by the Master-at-Arms that such an alien was a disorderly person and I have seen them dealt with accordingly. Patients are taken directly from our hospitals and cared for on some vessels without reference to their illness at all. One ship's surgeon informed me that it was the rule of his company to put all deported insane aliens in straight jackets during the voyage. I believe that your appeal to Congress will effectively dispose of this particular abuse. The presence of a person of the same sex in attendance will ensure the proper care of insane aliens being deported and also their return to their own homes.

The objection has been made that certain foreign governments would not permit such attendants to pass their borders. It is a fact that even insane aliens who are being deported to Russia have to be smuggled into Russia from Germany by "official smugglers" of the latter country. This proceeding usually takes place at night and I have been told by those who have personal knowledge of the facts that it is sometimes necessary to gag insane aliens being smuggled across the line to prevent them from making an outcry and being detected. The abuses which are possible under such conditions can be readily seen. With trained attendants in the service of the United States, such occurrences would be impossible.

Passage of the sick and wounded between the lines is permitted even in times of actual war between civilized nations and if there is a nation so barbarous as to refuse to permit a trained nurse employed by the United States to accompany an insane subject of that foreign Government to his home, I think that it would be better to pass our law and ventilate that nation's inhumanity before the world than to continue our present reckless disregard for the safety of helpless insane aliens, simply for fear that a change in our methods might not be acceptable to some foreign Government.

DR. BRUSH.—The Chair and others have spoken very kindly of this report, and the chairman of the committee wishes to be absolved from all credit in the matter. The first part is a copy of a resolution on the same subject by the National Committee for Mental Hygiene, and we have had, as I said before, the assistance of Dr. Salmon, Dr. Campbell, Mr. Goodwin Brown and others. We have tried to place this matter on the basis upon which it should stand. The question is a purely medical one and, therefore, should be based on medical opinions. The Public Health and Marine Hospital Service is rapidly equipping itself with trained alienists who are making these examinations and giving these opinions upon the same ground that we give opinions in our general practice or in our hospital practice, and these opinions are based upon experience, not the experience of some one who knows nothing about the subject whatever.

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THE PRESIDENT.—It is the opinion of the Chair that Dr. Brush has said nothing to absolve himself. Are you ready for the question?

Motion carried.

DR. BURGESS.—I would make a request that a copy of this report be sent to the Canadian Government as well.

THE PRESIDENT.—It has been moved that a copy of this report be sent to the Canadian Government. If there are no objections it is so ordered.

THE PRESIDENT.—Report of the Committee on the Status of Medical and Scientific Work in the Hospitals of the Several States and Provinces, of which Dr. Meyer is chairman.

DR. HOCH.—I saw Dr. Meyer in Boston and he told me that there had been nothing done and, therefore, nothing to report.

THE PRESIDENT.—We will listen to the report of Dr. Henry M. Hurd, Chairman of the Committee on Institutional Care of the Insane.

Dr. Hurd read the report as follows:

REPORT OF COMMITTEE ON THE INSTITUTIONAL CARE OF THE INSANE.

Gentlemen: As chairman of the committee, I desire to report that although no formal organization of the committee has taken place, much correspondence has been conducted between the members of the committee, and a division of the work has been planned for the different members of the committee.

The New England States have been assigned to Dr. G. Alder Blumer, of Providence, R. I.; the States of New York, Pennsylvania and New Jersey to Dr. Charles W. Pilgrim, of Poughkeepsie, N. Y.; Canada and the Maritime Provinces have been assigned to Dr. Burgess, of Montreal; Wisconsin and Illinois, to Dr. Dewey, of Wauwatosa, Wis.; and the State of Virginia and the Southern States to Dr. Drewry, of Petersburg, Va. The remaining states have been undertaken by the chairman of the committee.

Perhaps it should be added that the chairman of the committee has felt at liberty to correspond more or less extensively with members of the Association in all the states and has written repeatedly to ask for material, outlines of histories and the like. It is evident from the amount of material in the possession of the chairman that the publication of the work will require more than one volume. It is a difficult matter, in fact, to set definite limits to a historical work of this character because of the nature of its publication. It seems essential that some preliminary sketches be introduced giving an account of the progress of psychiatry, a history of the different methods of caring for the insane, a sketch of the architectural advances which have been made both as a result of the original "*Propositions*" and in the modifications which afterwards were made by the

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erection of group buildings, detached buildings, cottages and industrial buildings. It also seems advisable that there should be a careful sketch of the development of scientific work in the different institutions, of the growth of non-restraint methods in America, and of the substitution of occupations, industries and recreative amusements for restraining apparatus. It further seems desirable to have a sketch of the changes which have occurred in every state in the laws of commitment, the growth of voluntary admissions and the parole of patients. The change of attitude of the profession of medicine toward the whole subject of insanity has also been so great as to be worthy of record in this permanent manner.

If the manuscript of the history of the individual states be prepared alphabetically, and I see no help for it, it becomes important either to give the committee discretion to extend the work to as many volumes as may be necessary to present a full history, or to wait until all the material is in hand to present to the Council or to the Association before any printing is begun. It would seem preferable to give the committee, in connection with the President and Secretary-Treasurer, discretionary powers as to printing. Three years ago, at Washington, a continuing appropriation of $250 per annum was made to collect material and to defray the expenses of the undertaking. Of this amount less than $225 have been expended, leaving an unexpended appropriation of a little more than $500. In the absence of any definite instructions from the Association in the matter, the committee will make the following recommendations:

I. That the manuscript be completed as speedily as possible, and that the power to print it be left discretionary with the committee, the President and Secretary-Treasurer of the Board.

II. That illustrations and ground plans be introduced wherever in the judgment of the committee they will add to the interest of the history, and that an effort be made to obtain from individual institutions an appropriation to defray the expenses of its own illustrations. Such illustrations will add materially to the value of the work and the cost to any individual institution need not be at all onerous. Many fine plates are probably already in their possession.

III. A similar question arises as to the publication of original documents. In many instances it is extremely important from an historical standpoint to be able to cite original acts of legislation or original reports of committees. Thus, for example, in the State of New York the report of the committee which preceded the establishment of the Willard State Hospital, is of great value and extracts from it ought to be published. The same is true of certain reports which preceded the founding of the earlier state hospitals. Shall the history comprise such documents?

IV. It seems to the members of the committee that the local interest in the completion of this work would be increased if the committee had power to appoint subsidiary committees.

Very respectfully submitted on behalf of the committee.

HENRY M. HURD, *Chairman.*

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DR. HURD.—I make a motion that the recommendations, herein, be referred to the Council.

Motion seconded.

THE PRESIDENT.—It has been moved and seconded that the report of Dr. Hurd be referred to the Council. It is so referred.

DR. MABON.—May I present a report at this time?

THE PRESIDENT.—You may.

Dr. Mabon offered the following resolution:

WHEREAS, The National Committee for Mental Hygiene, an organization for the betterment of conditions among the insane and the prevention of mental disease, has recently received a generous gift which renders it possible to make studies into conditions affecting the welfare of the insane and to assist actively in such measures as will result in improvements, and

WHEREAS, A carefully considered plan of work has been prepared for the study of the existing provisions for the care of the insane in all the states, the laws and methods for commitment and their practical operations, care pending commitment, after-care, social service and the facilities for instruction in mental diseases in the medical schools, and

WHEREAS, The success of this important new movement depends very largely upon the co-operation of all those interested in the welfare of the insane, therefore, be it.

Resolved, That the American Medico-Psychological Association expresses its gratification that private philanthropy has made this work possible, and be it further

Resolved, That the American Medico-Psychological Association and its members individually heartily co-operate in order that the success of this movement on behalf of the insane may be assured.

DR. MABON.—In presenting this resolution, I wish to say that twelve members of the National Committee for Mental Hygiene are members of this Association. The press notice which I will read may be of interest to the members of this Association.

"At the fourth annual meeting of the National Committee for Mental Hygiene, held yesterday afternoon at the Hotel Manhattan, announcement was made of the gift to the organization of $50,000, immediately available for the inauguration of its work. The donor, who has requested that no public mention of his name be made at present, has promised another gift of $50,000 toward a permanent endowment fund as soon as $200,000 has been raised.

"This gift makes possible the active inauguration of a national movement for mental hygiene, the first, so far as known, undertaken in any country. It will take the form of a systematic effort to improve conditions affecting

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the insane, as well as the education of the sane on the subject of mental disorders, their known causes, prevention and cure.

"The work provided for by the gift is to be begun at once in the form of a survey of the national field, to be made by a special sub-committee of which Dr. William L. Russell, Superintendent of Bloomingdale Hospital, is chairman. Dr. Thomas W. Salmon, of the United States Public Health and Marine Hospital Service, who has been granted a leave of absence for the purpose, will be in charge of the active work of the survey. The National Committee for Mental Hygiene has opened an office in the Germania Life Insurance Building, 50 Union Square, and all its work will be directed from there.

"The chief object of the National Committee, after it shall have collected the facts, is to seek to co-ordinate all work for mental health and the treatment of mental disorders throughout the country. It aims to make its headquarters a clearing-house for the prosecution of this work, and a center for the organization in all the states of local societies similar to the Connecticut and Illinois societies for mental hygiene, and the Committee on Mental Hygiene of the State Charities' Aid Association of New York. It will thus encourage and aid the establishment, under the direction of such societies, of social service, including prevention, advice and after-care. And in general it will seek in every way to raise the standard of American knowledge and practice in the prevention and cure of mental disorders."

As stated yesterday, the committee has already expended $1000 in having the laws of the different states summarized. Now, briefly, the summaries are as follows:

EXPLANATORY NOTES REGARDING SUMMARIES OF LAWS RELATING TO THE INSANE, COMPILED BY MR. JOHN KOREN, SPECIAL EXPERT OF THE U. S. CENSUS BUREAU.

"The summaries cover the existing laws in each state, including the District of Columbia. The provisions made for insane outside of Continental United States have not been considered.

"The summaries are based upon a first hand examination of the codes and statutes of the respective states, ending with the year 1911. The new legislation for 1912 has been added where any statutes were enacted that modified or supplemented previous laws.

"The underlying purpose has been to present the summaries in such a form that comparisons may readily be made between states in regard to the most important provisions of the laws. This necessitated the adoption of a uniform scheme and of stating the laws of the different states under specified heads regardless of the fact that the codes and statutes follow their own order of presentation. Any other procedure would have rendered comparisons very difficult, if not impossible.

"The matter contained in the summaries is comprised under the following heads:

"1. Administration and supervision.

a. General. b. Institutional administrative and supervisory agencies.

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"2. Provisions for the care of the insane.
In institutions—state, local.
"3. Commitment.
a. Classes committed. b. Legal procedure in commitment.
"4. Conveying patients to the hospital.
"5. Transfer of patients.
"6. Parole and discharge of patients.
"7. Cost of maintenance.
"8. Criminal insane.

"To a thorough understanding of state asylums of care of the insane belongs, self-evidently, a statement, not only of institutional management, but of general administration and supervision. Therefore, the composition, general powers, and duties of state boards of insanity, state boards of charities and correction and other supervisory bodies are given in some detail. It also seemed desirable to outline briefly what the laws prescribe in regard to institutional management.

"Under 'provisions for the care of the insane' is shown the number of state hospitals in each state and mention made of local institutions.

"The portions of the law contained under divisions 3, 6 and 8 have been summarized with due regard to details as they are of special importance. The original text has been followed as closely as possible. Briefer statements could have been obtained by avoiding the language of the statutes, but not without a definite loss and, perhaps, the bewilderment of persons familiar with the laws of their own state. The original order, in which the legal prescriptions occur, which for many states is far from logical, was not compatible with a scheme of presentation usable for purposes of comparison. A great mass of mere verbiage has been cut out. The prescriptions concerning forms of records, interrogatories, etc., were wholly omitted as lacking in general interest and making for inordinate length.

"A few codes make much of prescriptions that for the most part are left to the discretion of boards of managers of hospitals, for instance, in regard to postal facilities for patients and the like. Matters of this kind were usually omitted, likewise the often very lengthy enactments concerning bookkeeping, financial statements, etc.

"The unequal emphasis placed by the codes upon the obviously important and obviously unimportant is necessarily reflected in the summaries; and from the point of view of some, matters have been omitted which they may regard as significant. This was unavoidable. It is believed, however, that no essentials have been left out.

"Although the criminal insane are relatively not numerous, the legal provisions in regard to them have been stated in detail because of the growing recognition of the importance of the subject.

"References in the margin make it possible at once to refer to the original code or statute from which the section in question was taken.

"An examination of the summaries soon make it clear that some states legislate in detail about matters which in other states are supposedly left to the regulation of the boards of trustees or managers of hospitals. There-

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fore, in some instances the summaries should be considered together with the rules and regulations established by local hospital boards.

"Considered as a whole, the laws relating to commitment and care of the insane in the United States may be said at the present time to form a chaotic mass and to represent all sorts of stages of development or lack of development. It is a common observation that the states with the most highly developed systems of care of the insane also have the best and most complete laws, and it seemed entirely appropriate to give the summaries for such states in greater detail than the others."

It seems to me that every member of the Association should have at his disposal copies of this publication, and I am sure the committee would be glad to furnish them, if a sufficient number were ordered, at a reasonable price. We wish to get the endorsement of this Association, of the work attempted by this Society.

DR. EVANS.—What would be the cost?

DR. MABON.—I have no way of getting at it, but the laws of all the states are numerous, and would make a good-sized volume. I should suppose it would not exceed one dollar.

DR. EVANS.—I take it for granted that the condensation of these laws is being asked for from the various states directly from this organization, or through the Bureau at Washington, because I have had a condensation of the laws of New Jersey sent to me for approval, and I did not know what form it would probably take. At any rate, whatever the cost, if less than five dollars, you can be sure of a few of us to support such a thing.

THE PRESIDENT.—I will ask the Secretary to read this resolution of Dr. Mabon's so all may understand it before I put the question.

The Secretary then read the resolution as above.

THE PRESIDENT.—What shall we do with this resolution?

DR. MITCHELL.—I move it be adopted.

DR. EVANS.—Seconded.

Motion was carried and the resolution adopted.

The following papers were read:

"The Legitimate use of Psychic Influences in the Treatment of the Sick," by Henry C. Eyman, M. D., Massillon, O. Discussed by Dr. Searcy, Dr. Woodson, Dr. Skoog, Dr. Burr, Dr. Gilliam, and Dr. Eyman.

"Some Atypical Forms of General Paralysis," by August Hoch, M. D., New York, N. Y. Discussed by Dr. Richardson, Dr. Miller, and Dr. Hoch.

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"Psycho-sexual Anæsthesia in a Case of Psychopathic Personality," by Morris J. Karpas, M. D., New York, N. Y.

THE PRESIDENT.—Immediately following adjournment there will be a meeting of the Council in this room.

Adjournment.

AFTERNOON SESSION.

THE PRESIDENT.—The Association will please come to order.

The first thing on the program is a paper entitled, "Exciting Causes in Psychiatry," by A. J. Rosanoff, M. D., Kings Park, N. Y.

THE PRESIDENT.—The next in order is the report of the Council.

REPORT OF THE COUNCIL FOR MAY 30, 1912.

The Council has received the following applications. In acordance with the constitution, final consideration of these will be deferred until next year: For honorary membership: Hon. Goodwin Brown, Yonkers, N. Y.

For Active membership: C. A. Nevitt, M. D., Lexington, Ky; George Mitchell Parker, M. D., New York, N. Y.

The Council recommends that James S. Hammers, M. D., Danville, Pa., be elected to Associate membership.

The Council recommends that Horace G. Ripley, M. D., Taunton, Mass., be transferred from Associate to Active membership.

The Council makes the following recommendations:

That the incoming President be authorized to appoint a Program Committee for the next annual meeting, and also a Committee of Arrangements.

That the dues for the ensuing year be fixed at the usual rates, viz.: Five dollars for Active members and two dollars for Associate members.

That the Secretary be authorized to publish the Transactions of this meeting.

That, in accordance with custom, the Secretary be authorized to reimburse Hon. Herbert P. Bissell for his traveling and hotel expenses.

The Council has received and accepted the report of Dr. Henry M. Hurd, Chairman of the Committee on Institutional Care of the Insane, concurs in the recommendations therein, and authorizes him to proceed as indicated in this report.

The Council has received a letter from Charles A. Boston, Vice-President of the Society of Mental Jurisprudence, asking that this Association appoint a committee to co-operate with other committees, to consider "the desirability of changing the legal measure of responsibility of those mentally diseased or defective, so as to accord more thoroughly with the views of students of the causes of mental defects," and recommends, that the Secretary reply to this letter, saying that the President of this Associa-

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tion will be glad to suggest one or more members for them to appoint on this committee.

Respectfully submitted,
CHARLES G. WAGNER, *Secretary.*

On motion, duly seconded, the report of the Council was accepted and adopted. The names of physicians proposed for election to come up tomorrow in regular course.

THE PRESIDENT.—The members will be very much interested and pleased I am sure, to know that there have been received previous to and during this meeting 143 new applications for membership, which is 100 more than has ever been received at any previous session. An eloquent tribute to the industry and tact of your Secretary.

THE PRESIDENT.—The Council will meet again immediately following this session.

We will now have what promises to be one of the most interesting and entertaining parts of our program, it is a symposium on the "Occupation of the Insane." This will be followed by illustrations with lantern slides, and then will follow the discussion. The first paper on the program is by Dr. Herring, of Baltimore, Md.

The following papers were then read:

"Diversional Occupation of the Insane," by Arthur P. Herring, M. D., Baltimore, Md.

"Occupation for the Insane," by C. Floyd Haviland, M. D., Kings Park, N. Y., read by Dr. Chester L. Carlisle, Kings Park, N. Y.

"The Re-education of Dementia Præcox Cases and Industrial Training of the Chronic Insane," by Charles T. La Moure, M. D., Gardner, Mass.

"A Nurse's Course in Occupational Diversion," by William Rush Dunton, Jr., M. D., Towson, Md.

"Experiences in the Temporary Construction Camp for the Negro Insane, with Special Reference to Co-operation of Industries," by Robert P. Winterode, M. D., Crownsville, Md.

These papers were discussed by Dr. Neff, Dr. Herbert B. Howard, Dr. Tuttle, Dr. R. S. Carroll, Dr. Hutchings, Dr. Briggs, Dr. J. C. Clark, and Dr. Richardson.

DR. RICHARDSON.—It seems to me that this discussion ought to end in some sort of action on the part of the Association. We realize, those of us who have tried these handicrafts, that there is no other agent so useful therapeutically in the treatment of the insane, and the exhibit downstairs has

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been of great benefit to those of us who have these departments in our institutions, because it helps us to find new occupations. It seems to me to be a splendid thing if the Association would adopt the idea of having an annual exhibit of arts and crafts work and let those who have something in that line, bring samples of work done in their institutions, and show in the various stages of the work as well as the finished product. It would not be a great deal of work for any one person. It would save us going around from one hospital to another and getting new ideas, and I move, Mr. President, that we make this exhibit of handicrafts an annual affair of the Association, and that all the hospitals in the country be invited to participate in it.

DR. HURD.—It would be a good idea to have some money, for there would, probably, be considerable expense connected with it.

THE PRESIDENT.—I understood that the matter was simply to be encouraged and the Association was to bear it in mind and see what could be done.

DR. RICHARDSON.—I intended it for a motion that we carry it through and that the Association spend a few dollars to carry it on.

THE PRESIDENT.—May I make the suggestion that you bring this up at the morning session tomorrow and be prepared to give a little talk. If you will bring it up again in the morning it will receive the attention it deserves. We will leave the matter open until then.

The meeting stands adjourned.

FRIDAY, MAY 31, 1912, 10 A. M.

THE PRESIDENT.—The Association will please come to order.

The report of the Council.

REPORT OF THE COUNCIL, MAY 30, 1912.

The Council has received the following applications for Active membership. In accordance with the constitution, final consideration of these will be deferred until next year: J. Ralph Jacoby, M. D., New York, N. Y.; John Nevin, M. D., Jersey City, N. J.

The Council recommends that the next annual meeting of the Association be held at Niagara Falls.

That the date of the next annual meeting be fixed for the week following the annual meeting of the American Medical Association.

Respectfully submitted,

CHARLES G. WAGNER, *Secretary.*

On motion, duly seconded, the report of the Council was adopted.

THE PRESIDENT.—The next in order is the election of the members proposed yesterday. The Secretary will read the names.

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The Secretary read the following: Jessie Peterson, M. D., Norristown, Pa.; Marion O'Harrow, M. D., Philadelphia, Pa.; Albert C. Buckley, M. D., Philadelphia, Pa.; James S. Hammers, M. D., Danville, Pa., for Associate membership. Horace G. Ripley, M. D., Taunton, Mass., for transfer from Associate membership to the Active class.

On motion, duly seconded and carried, the Secretary was instructed to cast the ballot of the Association electing them to membership.

THE PRESIDENT.—The Secretary has cast the ballot of the Association, and these physicians are elected members of the Association.

DR. PILGRIM.—In 1910 there was a committee appointed to report on the status of medical and scientific work in the hospitals of the several states and provinces, and thus far no definite report has been made. This seems to me to be a matter of great importance, and I rise to ask if it would not be desirable to ask the chairman of this committee to make its report next year?

THE PRESIDENT.—An exceedingly good suggestion. This committee was appointed and has been continued and all it has done for the Association so far as we know, is to report no progress. The suggestion of Dr. Pilgrim is timely, and his idea is that by another year they should make a report or show cause why they should not be discharged.

DR. PILGRIM.—That is my idea, and I will put it in the form of a motion.

Which motion was duly seconded and carried.

DR. CAREY.—I have a resolution here which I have been requested to present to the Association:

WHEREAS, Certain classes of mental defectives now exist in large numbers, and

WHEREAS, These classes are constantly and rapidly increasing, and

WHEREAS, The President of this Association has so forcibly called our attention to these conditions in his admirable annual address, and

WHEREAS, This, the American Medico-Psychological Association, consisting of representative scientific men who are constantly brought in close contact with these conditions and their results, should take some action to place itself upon record concerning this question, therefore, be it

Resolved, That a committee consisting of five Active members of this Association be appointed by the President thereof, to be styled, "The Committee on Applied Eugenics," to carefully consider the various phases of the subject and report at the next meeting.

DR. CAREY.— I move this resolution be adopted.

Which motion was duly seconded and carried.

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Dr. J. Percy Wade offered the following resolution:

WHEREAS, The Diversional Occupation of the Insane is a subject of such practical importance in the treatment of the various psychoses, and

WHEREAS, The methods embraced in this form of treatment have been introduced in a comparatively small number of public and private institutions for the insane, and

WHEREAS, It seems desirable for the welfare of the patients, as well as to improve conditions in said institutions in this country by means of affording occupation and recreation for all classes of cases adapted to such treatment, therefore, be it

Resolved, That a committee of three from the American Medico-Psychological Association be appointed by the President to make a survey of the private and public institutions for the insane in this country, regarding the occupational and recreational methods in use and report at the next meeting of this Association any recommendations looking to the general adoption of such forms of treatment.

THE PRESIDENT.—You have all heard this resolution just offered, what shall be done with it?

DR. HURD.—I move that it be adopted.

Which motion was duly seconded and carried.

DR. RICHARDSON.—I would ask that this committee be also authorized to promote and manage an annual exhibit of the arts and crafts work done in all the hospitals for the insane, and that they invite all the hospitals to take part in this exhibit. I, therefore, move that this be added as an amendment.

THE PRESIDENT.—This is a good amendment; it may not be desirable to incur expense in this exhibit, but this is only an individual opinion.

DR. C. G. HILL.—I suggest that these exhibits may occur without making it binding on the Association to carry them out; if it did not seem practicable it would not obligate the Association.

DR. RICHARDSON.—I will amend the motion in this way—that the Association have an annual exhibit of arts and crafts if in the opinion of the Association it is feasible.

DR. HILL.—I second the motion.

Motion was carried.

THE PRESIDENT.—It is so ordered.

The following papers were read:

"Polyneuritic Delirum—Korsakoff's Psychosis," by William C. Sandy, M. D., Trenton, N. J. (Read by title.)

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"A Case of Catatonic Hirntod," by Samuel T. Orton, M. D., Worcester, Mass. Discussed by Dr. Hill.

"Further Observations on Alzheimer's Disease, by S. C. Fuller, M. D., Westborough, Mass. and H. I. Klopp, M. D., Allentown, Pa., read by Dr. Fuller. Discussed by Dr. Richardson and Dr. Fuller.

"Discharge of Insane Criminals," by W. M. English, M. D., Hamilton, Ont. Discussed by Dr. Burgess, Dr. Woodbury, Dr. Hill, Dr. Gorst, and Dr. English.

"The Relation of Certain Psychoses to the Neuroses," by Chester L. Carlisle, M. D., Kings Park, N. Y.

THE PRESIDENT.—I am ready now to report the names of the two committees asked for, and because of the fact that the work is likely to be done by correspondence, I will name the chairmen:

Committee on Diversional Occupation of the Insane: Dr. J. Percy Wade, Maryland (chairman); Dr. W. W. Richardson, Pennsylvania; Dr. Charles T. La Moure, Massachusetts.

Committee on Applied Eugenics: Dr. H. M. Carey, Pennsylvania; Dr. E. E. Southard, Massachusetts; Dr. M. L. Perry, Kansas.

DR. HILL.—I move that our former President be on the Committee on Applied Eugenics, and that it is the sense of this body that our President, Dr. Work, should constitute one of the committee.

Motion duly seconded and carried.

DR. SEARCY (presiding).—The Chair will appoint Dr. Work as chairman of that committee, and will also appoint Dr. Hill as the fifth member of the committee.

THE PRESIDENT.—We will now have the report of the Committee on Resolutions.

DR. HILL.—Dr. Blumer is not here and has asked me to make a report, as follows:

Resolved, That, as members of the American Medico-Psychological Association, we are sensible, without specification of the many items of indebtedness that are obvious to all who have insight to discern the relation of cause and effect, of our obligation for all that has tended to make this Sixty-eighth Annual Meeting one of the most successful and most memorable that our long and eventful history records, and that we, therefore, extend a hearty vote of thanks from the ranks to the President and officers of the Association, as well as to the Committee of Arrangements, whose foresight and efficient generalship in the field have compelled this

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acknowledgment of the service and achievement of which, hereby, we confess ourselves the delighted and grateful beneficiaries.

Resolved, That the thanks of this Association are, hereby, tendered to our retiring President, who has contributed so much to make this one of the most successful meetings of our long and eventful career, by the judicious selection of the Program Committee, his Committee of Arrangements and all other committees, as well as his own personality, his executive capacity and his brilliant wit that has enlivened many dull moments of our meeting. We would also thank the hotel management for providing so thoroughly for our comfort and convenience.

Respectfully submitted,

G. Alder Blumer,
B. M. Caples,
Chas. G. Hill.

On motion, duly seconded, the report was accepted and adopted.

The President.—The report is accepted and adopted, except so far as it refers to the Chair.

There is a certain sadness connected with the performance of any duty for the last time. The sadness in this instance is all on the part of the Chair. I am sure that you will feel very much relieved to have our final adjournment, but I wish to thank you for your prompt attendance and your careful attention, which has contributed so much to the success of this meeting. The form of duties delegated to your presiding officer prescribes that he finally sings his own requiem by introducing his successor.

It seems an incongruous act for me to pass the gavel of authority to your new President, and attempt this formality for one who has been identified with this Association for a quarter of a century. Certain I am you will ask for him no guarantee. Trained a soldier in the war between states; schooled in the university of the world; graduated in medicine; now nearly half a century in its practice, we might truthfully say of him: "The world is his country and to do good is his religion." To such a man the office I prized so highly must seem a little thing. For four years he fought with the sword for his people. For forty-five years he has fought with his keen mind the diseases of his people. He lives in the city that saw his birth, as though he, too, had said, "Entreat me not to leave thee nor to return from following after thee . . . . thy people shall be my people . . . . and where thou diest will I die and there will I be buried." A sentiment unknown to the nomad, but which has in it the essence of life. Admired, respected and honored here, for his professional attainments; trusted, counciled and loved at home, for himself; surely the wealth of a Crœsus must seem mean to such a man, by comparison. Is there some subtle virtue in the Southern sun? Is there a fountain of perpetual youth? For more than three-score and ten years that sun has shone on him. Some influence has defied the features age wears. For his eye is not dimmed, neither are his natural forces abated.

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This, gentlemen, is your new President: the soldier, student, scientist, and always a gentleman, Dr. James T. Searcy, of Alabama. (Applause.)

DR. SEARCY.—Mr President: The kindness and the complimentary manner of your words embarrass me more than you know. "The unexpected happens." Some two thousand miles away from the meeting in Denver, for some reason you initiated there a procedure that culminates to-day in the honor put upon me. For the past twelve months I have been trying to explain this to myself and I have not a satisfactory explanation yet. Kindly let me say that I appreciate, of course, the high honor, personally, but I recognize that the compliment is extended and pointed towards the section of the country from which I come. That fact is all the more gratifying to me. It indicates that the principle prevails throughout this organization that we are a national body. A far greater preponderance of membership lies in this part of the country. I feel a reluctance to take the Chair following such an excellent administration as we have just had. Besides, the prominence of the position is getting higher and higher every year.

As has been intimated by our President, I have been connected with this Association for some time. I was with this body, not as a superintendent, but invited to read a paper about twenty-five years ago at Washington. The personnel of the whole organization has greatly changed since that time; there are very few of those members now. Time has done a great deal since then. There is more permanency; political changes are less than there used to be, and there is being injected into our proceedings more of a scientific feature.

I cannot take the Chair without expressing my high appreciation of you, Mr. President, as a presiding officer and as an executive officer.

DR. WORK.—The King is dead; long live the King.

DR. SEARCY.—I want to repeat my appreciation of Dr. Work, of his ability as a presiding officer. I wish it could continue longer. I shall have to lean upon him and upon a number of you, and I do not wish to begin these duties without acknowledging that I shall have to depend most heavily upon our worthy Secretary; we could not get along without Dr. Wagner, and I shall look to him more than to anybody else for help.

DR. WORK.—I wish to inform you, Dr. Searcy, that you need have no fear, whatever, as regards the Secretary. Dr. Wagner can be depended upon absolutely to arrange every detail, and to give us a better meeting each year during his service.

DR. SEARCY.—There being no further business, I declare this meeting of the Association adjourned.

CHARLES G. WAGNER, *Secretary.*

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Correspondence.

Editors American Journal of Insanity:

My opinion regarding epilepsy is that it is, *per se*, a disease of the psychic center or cerebrum, due to an inherent peculiar faultiness of its structures and functions.

The convulsion is always initiated by a more or less complete, generally an entirely complete, unconscious condition, which proves it to be in the conscious cortex.

It is a reasonable hypothesis that, the neurons of the epileptic suddenly withdraw the associated contact of their connecting fibers, which condition of withdrawal constitutes unconsciousness.

And that, an unconscious state of the cortex is always, normally or abnormally, produced by the withdrawal of the associated contact of the afferent and efferent fibers of the neurons.

And that, in sleep, in anæsthesia, in shock, in syncope, in concussion, and in the initiatory stage of an epileptic convulsion, this condition occurs. The associated contact of the fibers of the neurons is withdrawn; their erectile wakefulness is suspended.

In epilepsy, there is an inherent faultiness of function of this kind in this complex center, peculiar to the person, which is liable suddenly to produce this withdrawal of associated conscious contact.

The convulsion that follows is in the cortex; consisting in spasmodic attempts to resume an associated contact of the cells through their fibers. The peculiarity of the disease is, this attempt at resumption occurs in spasmodic waves of action—not steadily, as occurs in a normal return to consciousness.

Waves of convulsion, of this kind, sweep over the cortex, until, after an exhausted or quieted stage, associated contact or consciousness is gradually resumed.

The voluntary muscles over the body are also convulsed, because the motor tracts of the cerebrum, which control them, are convulsed. The convulsion of the voluntary muscles is the

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most prominent symptom, because their movements are open to outside observation. The seat of the trouble, however, is in the cortex; it is the part convulsed.

For this reason an epileptic convulsion, often repeated, does injury to the brain. The stress and strain of repeated convulsions impair cortical structures and functions—injure the neurons of the psychic center.

In this way, any inherent tendency or predisposition to abnormal mentality is increased, and eventually made to show itself in the deportment of the person; so that, any psychic peculiarity of the epileptic person is made worse, in time; whether it be towards hysteria, paranoia, melancholia, mania, irascibility, pugnacity, or any other aberrancy; and, like in all progressive, impaired conditions of the brain, the eventual condition is dementia—a generally impaired condition of all psychic abilities; so, most epileptics wind up in terminal dementia.

I do not think we can explain epilepsy, or the results of epilepsy, more satisfactorily than along the lines I express above. I am, sirs,

Very truly yours,
J. T. SEARCY, M. D.

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Notes and Comment.

THE ATLANTIC CITY MEETING.—The Atlantic City meeting of the American Medico-Psychological Association presented many pleasant features and all worthy of especial mention. The weather was fine; the sky was bright; the sea sparkling; and a succession of cool, delightful sea-breezes day after day contributed materially to the comfort of all members.

The place of meeting was well-chosen and the spacious windows of the Marlborough-Blenheim afforded at all times an inspiring view of white-capped waves and fine surf, most novel and attention-compelling sights to all who dwell at a distance from the sea.

The attendance of members was large during the entire series of sessions from Tuesday morning until Friday noon. The papers were of exceptional quality and the discussions were full and often illuminating. If any criticism could be offered of the programme it might be justly directed to its over-fullness. There was no leisure for anything but hard work and had it not been for the energy and promptness of one of the best presiding officers the Association has ever had, the lengthy programme could not have been completed with the close of the sessions. No other similar medical body accomplishes so much work or so regularly extends its sessions to the fourth day.

The papers were generally read *in extenso,* and the twenty-minute rule was on occasion applied with Procrustean severity. This suggests the desirability of presenting papers in abstract whenever possible, without a full reading, which reading may later be had in the JOURNAL OF INSANITY or the Transactions whenever the interested member desires to consider them more critically.

The exhibits of industrial and recreational occupations from Crownsville, Springfield and Sheppard Hospitals, Maryland, and the Gardner, Mass., State Colony, attracted much attention and gave rise to an excellent discussion. It is to be hoped that similar exhibits may be a regular feature at future meetings. The

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address of the President, with its stirring appeal to fresh and effective effort to prevent insanity by checking unfit marriages and preventing the birth of defectives by sterilizing criminals and imbeciles, was much applauded. All felt that the time had come to arouse public opinion to deal with the whole question of eugenics in a radical manner.

The failure to receive a report from the committee appointed two years since to report on the scientific work prosecuted by institutions for the insane throughout the country was a disappointment to many. It is anticipated that the committee will be ready to report at the next meeting.

It was gratifying to observe that the preparation of a history of the institutional care of the insane received much encouragement and many promises of coöperation. The time seems ripe to push this great work to a speedy conclusion. Where all the papers were so meritorious it seems unnecessary to individualize the work of any person for more particular mention. The volume of Transactions and the pages of the JOURNAL will amply exemplify the excellent character of the work presented.

It is a matter of regret to the editors personally that it was decided to be best by a small majority to sever the connection with the Congress of American Physicians and Surgeons—but the majority should rule!

The next meeting is to be held at Niagara Falls at a time to be announced by the council. Dr. J. T. Searcy, of Tuscaloosa, Alabama, was elected President; Dr. Carlos F. MacDonald, of New York, Vice-President; and Dr. Charles G. Wagner, of Binghamton, Secretary-Treasurer, for the coming year. The success of the meeting was largely due to the efficient work of Dr. Work, the retiring President, and of Dr. Wagner, the Secretary. All praise to them!

NATIONAL CONFERENCE ON PELLAGRA.—In response to invitations from the State Medical Association and the State Board of Health of South Carolina, the National Association for the Study of Pellagra will hold its next triennial meeting in Columbia, S. C., October 3 and 4, 1912—the week following the Washington meeting of the XV International Congress on Hygiene and Demog-

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raphy. Invitation is extended to all persons interested in pellagra to participate in this meeting.

The co-operation of officers of the Government Medical Services, State Boards of Health and State Hospitals for the insane is especially solicited.

It is expected that several foreign governments and medical organizations will be represented at the conference.

Persons wishing to present papers will please address the special committee consisting of Drs. J. W. Babcock, J. J. Watson, and J. H. Hayne, Columbia, S. C.

BOSTON PSYCHOPATHIC HOSPITAL.—The Psychopathic Hospital, 74 Fenwood Road, Boston, was opened for public inspection June 21 and for the reception of patients two days later. The institution is officially a department of the Boston State Hospital and its business arrangements are to be under the charge of the Superintendent of the Boston State Hospital—Dr. Henry P. Frost. The Director of the institution is Dr. E. E. Southard, Pathologist to the Massachusetts Board of Insanity and Professor of Neuropathology in the Harvard Medical School.

The Chief of the Medical Staff is Dr. Herman M. Adler, formerly of the Department of Theory and Practice of the Harvard Medical School, and, more recently, Pathologist to the Danvers State Hospital. The immediate executive arrangements are under the control of Dr. Stephen E. Vosburgh, formerly Assistant Physician at the Boston State Hospital.

The Pathologist and Chief of the Out-Patient Department have not yet been appointed.

The hospital contains 100 beds—50 of which are in a separate pavilion called the Reception Ward, and 50 are on the top floor of the main building in the so-called Observation Ward.

The Reception Ward has a clearing-house function for the insane of Boston. The Observation Ward is for the investigation of special cases under special arrangements. Much stress will be laid upon investigation of psychiatric problems and upon the social service problems of the Out-Patient Department.

SIR GEORGE H. SAVAGE.—We had occasion in the April number of the JOURNAL to refer to the fact that Dr. Thomas S. Clouston

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of Edinburgh had been honored with a knighthood, and now Dr. Savage, who has held in London a position similar to that occupied by Dr. Clouston in the Scotch capital, has received similar recognition. Truly, British psychiatrists are coming to their own, as far as honors from the throne are concerned.

Dr. Savage was for many years the head of the Bethlem Royal Asylum, has been president of the Medico-Psychological Association of Great Britain and Ireland and editor of the *Journal of Mental Science*. For many years he has been engaged in consultation practice in psychiatry in London. Sir George has visited this country and has many American friends and admirers, who will wish to congratulate him. The JOURNAL, on its own behalf, and in that of his many friends in this country, sends greeting and congratulation to him and, at the same time, to his associates in psychiatry in Great Britain and Ireland, that one of their number, and one so signally deserving, should have been included among those recently honored by royalty.

W. B. SAUNDERS COMPANY have just issued a new (6th) edition of their Illustrated Catalogue, which describes some forty new books and new editions published by them since the issuance of the former edition.

The books listed in this catalogue cover every subject of interest to the medical man. The descriptions and illustrations are such as to enable the reader to select easily just the book he wishes on any branch. It is really an index to correct medical literature—an index by which the practitioner, the surgeon, and the specialist can acquaint himself with what is new in the literature of his subject.

This edition also contains an illustration and description of Saunders' new building, now being erected on Washington Square, Philadelphia's new publishing center.

Any physician wishing a copy of this handsome catalogue can obtain one free by addressing W. B. Saunders Company, 925 Walnut Street, Philadelphia.

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Book Reviews.

Ueber Nervöse Entartung. By Professor Dr. Med. Oswald Bumke, First Assistant in the Psychiatric and Neurological Clinic of the University of Freiburg i. B. (*Berlin: Julius Springer, 1912.*)

Amid the frequent and lugubrious warnings of social cataclysm, it is comforting to take up a study that combines a critical attitude towards the problem with a more reassuring tone. The book is, in fact, a broad-based inquiry into the rôle of a degenerative process in human evolution; and not, as its title and manner of publication had led the reviewer to expect, a study of certain clinical types. It is a good deal simpler to define the condition than the process; the upshot of the remarks on this phase of the matter being to emphasize its necessarily progressive character, and its possible independence of heredity. The two questions are whether social deterioration is really present, from whatever cause, and whether such deterioration may be grounded in hereditary influences (Morel). The application of Mendel's Law is discussed in the second chapter, unfortunately without reference to recent work done in this country on its relation to the psychoses. Attention is called to a sort of hereditary conservation of energy; the entire sum of inheritable qualities being equal for a given community, no matter how distributed. The question is whether new characters may be formed through inheritance, or more properly if new characters can be thus transmitted. Inheritance of acquired characters is unconditionally negative for the problem; very fortunately so, as the author remarks. This must of course be distinguished from exogenous effects on the germ cells, which, under certain conditions, might be transmitted. Actually, however, this plays no great part in the problem. Though the progeny of a syphilitic or alcoholic parent may suffer gravely, the degeneration is not necessarily progressive, but is apt to be overcome in succeeding generations. The book indeed shows no tendency to exaggerate the hereditary dangers of alcohol or syphilis which show themselves rather in the limitation of viable offspring than in their inferiority; while the social injuries due to these causes are undeniable, they do not come within the proper conception of the degenerative process. The so-called "stigmata of degeneration" are of negligible significance. Even in the hereditary psychoses, the pathological traits do not dominate over the normal ones (Meynert, Sioli); though an isolated exception perhaps occurs in Huntington's Chorea. There is some mention of inbreeding, harmful only when involving an inferior stock, or when of too long continuance. Inheritance does not lead generally to degeneration, but regeneration; and that cause of degeneration whose existence is undisputed (injury to the germ cells), injures only the immediate (second),

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generation; further transmission is possible, but not yet shown. In the question if modern civilization carries with it any special conditions favorable to a degenerative process, the author considers that whatever of such factors there are, are apt to be of ephemeral influence. Increasing suicide and admissions to insane hospitals but serve to eliminate so much bad blood from succeeding generations. The difficulty the author takes most seriously is the *Ausrottung der Besten,* whose principal factor is the voluntary limitation of offspring among the higher classes. This can, however, be of serious consequence only in mixed stocks, where the best are not continually replenished by variation from below. And again, this does not come within the technical concept of degeneration. One will, then, scarcely be surprised to find the author sternly opposed to any operative interference with procreation, as well as showing a general disbelief in legal attempts at the regulation of marriages. His attitude is among the most liberal the reviewer has seen expressed from an authoritative source. The final chapter is an inquiry into what symptoms of neurotic degeneration are actually to be found in the history of nations, or comparatively between contemporary nations of different degrees of civilization. A certain increase of neuroticism is admitted, but accounted for on external grounds. Modern civilization has indeed brought about conditions that bring neurotic traits more to the surface, but the present generation has no more fundamentally than any previous generation would have shown under present ways of living.

The book is quite condensed, and only a partial review has been possible. There is a considerable bibliography, which could, as indicated, have included more foreign names. The final impression is that while the race may have little to fear from a specific and progressive process of degeneration, this finding is reached only through a definitive ruling out of some of the main individual factors in social deterioration. If the author's optimism be justified it should in no way lead us to relax the efforts to be opposed to these baleful influences, but should rather give us greater confidence in the prospect of decisive success against them.

F. L. WELLS.

The Life and Work of William Pryor Letchworth, Student and Minister of Public Benevolence. By J. N. LARNED. (*Boston and New York: Houghton Mifflin Company. The Riverside Press, Cambridge, 1912.*)

Born of English ancestry from Quaker stock transplanted to America in 1766 and secure from pecuniary anxieties by a competence gathered by his own industry and business ability William P. Letchworth was enabled in 1873 at the age of fifty years to devote the remainder of his life to philanthropic works. How well he succeeded the record in the book before us amply shows. The wide range of his interest in public charity is well indicated by the biography appended to the book which presents twenty-four titles on child saving and the better care of children; ten in regard to the insane; eleven on the work of boards of state charities; six on the care of epileptics; and eighteen on miscellaneous topics connected with charity

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work, such as the care of the blind, the construction of almshouses, etc. In all of these branches of philanthropy he was a pioneer and did constructive work.

To inform himself more fully as to the best care of the insane he visited Europe to inspect methods there and published the results of his observations in a work entitled "The Insane in Foreign Countries" which attracted much attention. He studied all questions regarding the insane very carefully and painstakingly although it is evident that he did not feel as keen an interest in the subject as he manifested in child-saving, which was eminently his life-work.

He served on the New York Board of State Charities from 1873 until 1896 and only reliquished his connection with the Board when failing health compelled him to seek rest. His services in this capacity at first were almost wholly confined to the betterment of the condition of children in almshouses and orphan asylums. It is due to his presistent efforts in behalf of such children exposed at an early age to pauperizing influences and degrading surroundings that in New York and Michigan this vicious system was broken up and replaced by a system of care in families.

He also accomplished much for the establishment, erection and development of the institution for epileptics known as Craig Colony in New York and for a time served as one of the managers.

He was interested in the preservation of sites and objects connected with the early history of New York and at his death left his beautiful estate at Glen Iris to the State of New York as a public park and a museum of objects of anthropological and historical interest. In whatever pursuit he became interested he labored earnestly and unremittingly with an eye single to the public good. He gathered information thoroughly upon any given subject and was fully prepared to defend his position with a modest persistence which proved irresistible. The book is one of great interest and should be read by all workers in the widening field of charity.

Nineteenth Annual Report of the State Charities Aid Association to the State Commission in Lunacy, Nov. 1, 1911. (New York City: United Charities Building, 105 East 22d St.)

Students of psychiatry always are interested in the reports of the State Charities Aid Association for the reason that they usually assemble a mass of interesting facts and details respecting the most advanced care of the insane. While the present report is not as extended as some of its predecessors it contains much of value. It appears from the statistics presented that the total number of the insane in the state hospitals and private institutions of New York upon October 1, 1911, was 33,259 persons, an increase of 602 over the previous report. Of this number 30,999 were in state hospitals (not including Matteawan and Dannemora). This number is largely in excess of the certified capacity of existing institutions and the consequent overcrowding, especially in institutions in the vicinity of New York City, interferes much with the proper and effective treatment of patients. The

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remedies urged by the Charities Aid Association are the immediate completion of the Mohansic State Hospital in Westchester County, to provide for 2000 patients, and the establishment of a farm colony somewhere on Long Island, and the rebuilding and enlargement of the dilapidated Long Island State Hospital. These measures are urged in preference to the scheme to select a new site for the Utica State Hospital and its enlargement to provide for 2000 patients because of the hardships to patients of the journey to Utica and the desirability of treating patients living in New York in institutions near to the city so that they may receive visits from friends. It is surely wise to build hospitals with regard to the convenience of patients rather than to satisfy the claims of localities.

In the review of legislation it is pointed out that the recommendations of Mr. H. C. Wright in his report on "Methods of Fiscal Control" have borne fruit in the passage of an act giving power to the Lunacy Commission to employ additional engineers, inspectors and experts to advise the state hospitals as to the purchase, handling and consumption of supplies and also as to the best management of farms. His suggestion as to the wisdom of allowing estimates to be made with less detail at the discretion of the Commission has also been incorporated in the law. The reconstitution of the purchasing committee by the appointment of three superintendents and two stewards instead of the Auditor of the Lunacy Commission and two stewards is also commended—as also the appointment of an inspector of buildings and an inspector of supplies. Expert examiners of beef and butter are to be employed from time to time. These steps are undoubtedly in the right direction and yet one cannot help feeling that the increased machinery must be an added expense and that possibly some of these important positions may fall into the hands of experts of political rather than professional ability. The value of the changes must depend wholly on the men who are appointed to execute the new laws.

The reports of visitors to state hospitals are always interesting although of course of varying excellence. Thus for example it is at present a matter of importance to learn how many persons in the state have availed themselves of the law permitting voluntary admission to a state hospital. We learn that fifteen persons have been admitted at Middletown and twenty-two at Rochester, but the other visitors make no reference to the numbers thus received and we are left in the dark. The reader can appreciate the wisdom of not requiring local boards of visitors to follow any formal schedule in their reports, but this and other similar gaps in their reports show the need of supplying them with "suggestions" as to the character of the information desired.

An excellent suggestion is made by the visitors to the St. Lawrence Hospital as to the desirability of doing more to render the positions of the assistant medical officers attractive. In many of the institutions owing to lack of accommodations and small salaries celibacy and poverty seem to be inevitable. No wonder there are vacancies in the medical staffs. Provision should be made for married men so that they may choose psychiatry as a life work.

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The excellent report from Rochester on the re-education of cases of dementia præcox by suitable training and employment and persevering personal effort is worthy of wide circulation.

The methods of after-care at Manhattan, Central Islip, Hudson River and Willard are of paramount importance and should be extended to all hospitals. This report ought to be read by every superintendent.

Nervous and Mental Diseases. By ARCHIBALD CHURCH, M. D., Professor of Nervous and Mental Diseases and Medical Jurisprudence in Northwestern University Medical School, Chicago; and FREDERICK PETERSON, M. D., Professor of Psychiatry, Columbia University. Seventh edition, revised. (*Philadelphia and London: W. B. Saunders Company, 1911.*)

That this work has reached a seventh edition indicates that it has met in some degree the needs of a certain class of readers. The authors state that it is written for students and general practitioners and makes no pretense to be other than a carefully prepared text-book. The preface to the seventh edition claims that it embodies "every substantial advance in the domain of nervous and mental diseases up to the present time."

The portion devoted to nervous diseases is written by Dr. Church and has been apparently very carefully revised and to some extent rewritten. The opening chapter upon general physical examination is probably sufficient in detail for the general practitioner, but there are some things which he might wish included or elaborated more thoroughly. For example, lumbar puncture is dismissed with but short notice and with absolutely no description of methods.

In the portion on mental diseases the same disappointment meets the reader that has been found in previous editions. There appears a lack of proportion in the attention given to various phases of the subject and to various forms of insanity. Heredity, cranial and dental anomalies and anomalies in general occupy nearly twenty-four pages while but fourteen pages are devoted to the remaining etiological factors of insanity in which no mention is made of the influence of disease or defect of the thyroid gland. While it is shown by a table taken from the report of the N. Y. State Lunacy Commission that in 5222 admissions to the N. Y. State hospital for 1909, paranoia was not diagnosed once while paranoic conditions were found in 248 instances, less than five per cent, the author devotes twenty-five pages to paranoia which pages are, by the way, identical as far as a close examination reveals with those published in the first edition of this work. Arterio-sclerotic conditions receive no notice except in connection with other forms of insanity. Senile dementia and other senile psychoses are given but a little over four pages, and paresis but thirteen. It is strange to find no reference to lumbar puncture, now practiced almost as a routine in every modern hospital as a method of diagnosis in paresis, except brief mention in the part of the volume devoted to nervous diseases. The eight and one half pages devoted to dementia

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præcox will, we fear, give neither the student nor the general practitioner a very clear conception of the condition.

Dr. Peterson is not in favor of hospital care for the well-to-do or wealthy, but recommends home care or care in a country home with nurses for those who can afford it, or foreign travel.

There are those no doubt who will agree with him but we do not believe that psychiatrists of experience in what a well organized hospital can and does do for these cases will concur with his dictum. Travel for most mental cases is bad, home care, even in the city or country houses of the very wealthy, lacks many elements which can nowadays be found in many hospitals where constant medical supervision, not irregular and brief visits, and the services of trained nurses, methods of re-education and occupation and diversion are found which cannot be had in private houses nor in many so-called private sanitaria.

The work of both Drs. Church and Peterson has in many respects been well done, but it must be evident, we feel, to even a casual reader that the part on mental diseases does not measure up to the standard set by that on nervous diseases.

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AMERICAN JOURNAL OF INSANITY

A LAYMAN'S VIEW OF THE CARE AND TREATMENT OF THE INSANE IN THE STATE HOSPITALS OF THE STATE OF NEW YORK.*

BY HERBERT P. BISSELL,
Member New York State Hospital Commission.

Mr. President, Ladies and Gentlemen:

To be invited to address this learned and distinguished body on a scientific subject is an honor that I gratefully appreciate, but I feel that at the outset I ought to make a personal explanation or apology to justify in some degree my temerity in accepting the invitation.

It is hardly necessary for me to assure you that I shall not undertake to speak as a psychiatrist, although on account of my constant association with doctors I have in self-defense read a book and several pamphlets on psychiatry, and I believe that I have gained a glimmering knowledge of the difference between dementia præcox and paranoia, the manic-depressive psychosis and the case of constitutional inferiority with a paranoid trend, while the names of Kraepelin, Wernicke, Ziehen, Freud, Jung, Nissl, Alzheimer and Adolph Meyer have become as familiar to me as household words. I confess that I am still somewhat hazy in my understanding of the psychic trauma and psychoanalysis.

I shall endeavor to present to you a layman's view of the care and treatment of the insane in the state hospitals of the State of New York; this view having been gained from my experience as the law Commissioner of the New York State Hospital Commission, formerly known as the State Commission in Lunacy.

* Annual address delivered at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, New Jersey, May 29, 1912.

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No period of my life has been so full of interest as the period of this service. It has been devoted to work which could not fail to arouse earnest thought and sympathetic effort; and I can truthfully say that I have derived both pleasure and satisfaction from the activities, the achievements and the associations of the commission of which I am a member.

When I entered the service, I had practically no knowledge of the great department for the care and treatment of the insane that has been developed in the State of New York since the abolition of the barbarous "county care" system, and the passage of the State Care Act in 1890. As I have come to know and appreciate its progress and accomplishments, I have become more and more impressed with its value and efficiency, and the duty we owe, not only to aid in its further advancement, but also to give its merits and achievements wider publicity.

The first sentiment aroused by the contemplation of this department is a sentiment of optimism. We have good reason I believe to rejoice in the conviction that the world has been growing better, that medical science has advanced in all of its branches, and that we are living in an age of beneficent progress. With the beginning of the new century, a new era has opened before us—a new era of industrial and social progress; and one of the greatest accomplishments of the past decade is the development of the science of modern psychiatry. Henceforth, its progress cannot fail to be steady and certain.

I had expected, on my first inspection of the state hospitals, to view horrors and methods of treatment that would shock and depress me to such an extent that I would be glad to escape from the service. On the contrary, I find the work interesting and elevating in the highest degree. I have been brought to a realization that the study of the causes, the prevention and the treatment of insanity, and the exercise of a proper care of the unfortunate human beings committed to our charge, comprise a noble and responsible calling well worth a lifetime of devotion and self-sacrifice.

It is instructive to cast a look backward and to review such records of insanity as history has preserved; beginning with the age of superstition, when lunacy was regarded as a visitation from the gods; advancing through the enlightened period of Hippo-

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crates, whose teachings urged the abandonment of exorcism and the employment of hygienic measures; then retrograding into the demoniacal period when, in the dark ages of sorcery and witchcraft, tortures were employed to expel demons from the body, and thousands were burned at the stake who would to-day receive beneficent care, and, perhaps, recover, in a state hospital for the insane; and concluding with the chain and dungeon era of the seventeenth and eighteenth centuries, which was followed by the era of special asylums and hospitals that immediately preceded the present period, in which the science of psychiatry has been firmly established and is conducted along humane and beneficent lines. It is a pleasure to recount the practical services to suffering humanity of Pinel in France, of Tuke in England, of Jacobi in Germany, of Rush, Miss Dorothea L. Dix, Dr. Willard, Miss Louisa Lee Schuyler, representing the State Charities Aid Association, the New York State Medical Society, Dr. Carlos F. MacDonald, and the many others who in this country have advocated and helped to establish systems for the care of the insane by hospital rather than by prison methods. But the delegates to this convention are already so familiar with the history of insanity that I shall pass it over with only this brief mention.

I cannot refrain, however, from calling your attention to the fact that as late as the eighteenth century it was not uncommon to see lunatics publicly exhibited in cages in so refined and civilized a country as France, and this barbarity occurred at the very time when America's greatest philosopher and philanthropist, Benjamin Franklin, was residing in that country for the purpose of soliciting the aid of the French to secure the success of the American Revolution. It would help us to understand and appreciate our material and social advancement in the past century and a quarter if we could but bring back, in imagination, this most progressive citizen of the Colonial Age, and let him view the conditions of our modern life, and ask him if the world has not, indeed, improved, and if we are not justified in cherishing sentiments of optimism. You will recall that Benjamin Franklin founded the American Philosophical Society and our first public library, established the first public hospital and the first police force and fire department, founded the academy which afterwards developed into the great and flourishing University of Pennsylvania, and

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first discovered the practical application of electricity. He was, without question, the most enlightened and progressive American of his time. Now suppose we could awaken him from his long slumber in Christ Church Cemetery in Philadelphia and take him on a trip to New York City. Instead of making the journey on foot or by stage-coach, he would travel in a railway train drawn by steam, seated in a Pullman parlor car and would reach New York in two hours time, after enjoying a better dinner than he had ever eaten, in a dining car attached to the train. On his arrival at the North River, which he crossed in a small boat as a runaway apprentice in 1723, he would rush under the river in a subway on a train drawn by the power of electricity. After we have given him a little time to admire and stare at the magnificence of the Pennsylvania Railway station, let us place him in a taxicab and hurry him to the Waldorf-Astoria where he will be taken up to the fourteenth floor in an elevator and talk with his wife, Sarah Bache, through a telephone hanging on the walls of his room. In the morning, after he has been taught how properly to use the conveniences and luxuries of modern plumbing and has read in the newspapers an account of the doings of the previous day sent by telegraph or cable from all parts of the world, we will take him on a trolley trip to Belmont Park where he can view a flock of aeroplanes darkening the sky while one of them flies out of sight around the Statue of Liberty in New York Harbor; or, perhaps, he might witness the departure of Rogers for his aerial flight across the American continent; then returning by automobile, entertain him with some of Handel's oratorios played in his bedroom by an orchestra of sixty musicians confined in a Victor-Victrola two feet square; show him moving pictures of the coronation of the present successor to his hated Britannic Majesty, King George the Third, and take him down town on the elevated railway to see a building forty stories high, and let him receive a wireless message from mid-ocean, sent by the Morse code from the deck of a ship eight hundred feet in length constructed of steel and propelled by steam, which is crossing the Atlantic from London to New York in five days time over the same course which occupied him more than five weeks time when he sailed from New York to London on his voyage to appeal to the British Crown for justice for the American Colonies.

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Now if by this time the great sage and philosopher, the most progressive citizen and philanthropist of the eighteenth century, has not been sufficiently impressed with the progress of the world, and the improvements in the conditions of life, take him over to Ward's Island, introduce him to Dr. Mabon, and let him investigate the methods of conducting a modern hospital for the care and treatment of the insane. Instead of chains and dungeons, he will find open wards and humane treatment; instead of cages, padded cells and straitjackets, he will marvel at the open doors and the use of hydrotherapy, music, fresh air, homelike surroundings and salutary occupations in an institution having more than forty-six hundred patients under medical treatment. Instead of a turbulent madhouse like the Bedlam that he may have seen in England, he will find a clean, quiet and orderly hospital for the insane. Of course, he would wish to meet Dr. Hoch and receive an explanation of the scientific labors and discoveries of the Psychiatric Institute. He will be so amazed at the change from the conditions he saw at Bicetre and Salpetriere before Pinel struck off the chains and shackles from the unfortunate lunatics of Paris in 1792, that I think by this time our great patriot, sage and philosopher will be glad to return to Philadelphia, and continue his rest in Christ Church Cemetery, well satisfied with twentieth century methods for the care and treatment of the insane.

In the period which elapsed from 1830 to 1850, great and rapid advances were made throughout the United States in methods of caring for the insane. The reforms then accomplished attracted the attention of Europe. But excellence can be maintained only by continual progress, and it is well known that from 1850 until the State Commission in Lunacy was created, the barbarous system of county care in its worst form filled the poorhouses, and the so-called "county asylums" of the State of New York to overflowing with sufferers from mental disease. Dr. Carlos F. MacDonald, to whom all honor and credit will ever be due as the first medical Commissioner appointed under the act creating the State Commission in Lunacy, in 1889, relates that in that year the keeper of one of the county asylums stated to him with evident pride that he maintained the insane in his county at a per capita cost of ninety cents a week, or less than thirteen cents

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per day! It is, indeed, gratifying to reflect that since the poor and indigent insane have been brought under state care, the advances have been more rapid than during any previous period and that, should this improvement continue, it is not unreasonable to expect that at no distant day the methods of caring for the insane in this country, under the leadership of the State of New York, will reach a higher standard than those of any other country on the civilized globe.

Permit me to read to you from an interesting report made to the New York Legislature by a select committee to whom was referred so much of the message of Governor Marcy as related to the insane poor. The chairman of this committee was Honorable Amasa J. Parker of Albany, afterwards for many years a member of the board of managers of the Hudson River State Hospital. I hold in my hand an original copy of this report, dated March 29, 1834, and given to me by General Amasa J. Parker, son of the chairman of the committee, who has, himself, done valuable service as a member of the board of managers of the Hudson River State Hospital. It was reported:

> That the committee have given to the subject referred to them an attentive consideration, and concur unanimously in the opinion expressed in the governor's message, that the insane poor have a "rightful claim" for a much greater portion of legislative patronage than has hitherto been bestowed upon them.
>
> Among all the different classes of the unfortunate, for whose support and comfort it is the duty of the public to provide, there are none whose claims are paramount to those of the insane poor. Subjected as they are to the double ills of poverty and mental derangement, and utterly incapable of providing for the removal of either of these afflictions, their helpless condition appeals irresistibly to our sense of justice, as well as to our sympathies, and demands that relief which the public owe to the destitute members of the community.
>
> By the census of 1825, it appeared that there were at that time in this state 819 lunatics; and it is estimated by comparison with our increase of population, that the number at this time is not less than 1000. About 700 of these are paupers. For these, no adequate provision has been made for the purpose of affording them the advantages of proper medical treatment. They are generally supported at the expense of the different counties and towns to which they are chargeable, and confined in cells, or separate rooms provided for that purpose either in county poorhouses or in private abodes. Their security, and the protection of those around them, against any attacks to be apprehended from such as labor under the fury of maniacal madness,

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seem to have been the principal, if not the governing objects in the accommodations provided for them. Placed beyond the reach of medical relief, and treated like the perpetrators of crime, rather than the children of misfortune, the mental disease gradually fastens more firmly upon its victim, till it becomes incurable. What was at first but the wandering of intellect, is succeeded by the fury of the maniac, or the sullen despondency of incurable mental alienation.

It is now satisfactorily established that diseases of the mind yield even more readily to medical treatment than those of the body, and that in at least nine-tenths of the cases of insanity, the patient may be restored to the full enjoyment of his mental faculties by the early application of judicious medical treatment. But the physicians who have been most successful in the cure of insanity, are those who have devoted most of their care and attention to that single branch of medical science, and it cannot be expected that all the advantages necessary to a successful application of curative means can be afforded to the insane, while they are scattered throughout every part of the state. It is only when they are collected at an asylum provided for that purpose, and classified according to the nature and extent of the mental disease, and attended by those whose skill and experience qualify them for the charge, that relief can be afforded. They should have the advantages of pure air and healthy exercise, and constant medical attendance. Kind and judicious treatment should be substituted for the severity which has been so universally applied, and the medical attendants should have an opportunity of studying well the peculiar character and degree of the malady under which the patient is suffering, before he can successfully apply a remedy; and while, by comparing the different shades and peculiarities of the numerous cases of mental disease collected at an asylum, the physician will be able to afford more sure and ready relief to each patient, the comparison of cases will enable him to add much to the discoveries recently made in this interesting department of science.

The asylum at Bloomingdale, under the management of the governors of the New York hospital, is the only institution for the reception of the insane which has received any aid from the state. In addition to the money expended in founding and supporting that establishment, the sum of ten thousand dollars per annum is provided for its support till the year 1857. But not more than two hundred and fifty patients can be accommodated at that institution, and those who are unable to contribute to their own maintenance are excluded from a participation in its benefits.

* * * * * * * * *

The Lunatic Asylum at Hudson, under the care of Doct. Samuel White, is also a private establishment, which has been conducted with great success by its enterprizing and philanthropic proprietor, without the advantages of state patronage. The whole number that have been admitted and treated, since the opening of the institution, July 1, 1830, being a period of three years and a half, is one hundred and thirty-one.

* * * * * * * * *

These institutions, though highly useful and entitled to the favorable notice of the legislature, are by no means adequate to the public wants, nor

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do they afford any relief to that class of the insane to which the attention of your committee has been more particularly directed, viz: the insane poor. No asylum has been provided for them, nor have the legislature made any appropriation of money for their benefit, although the subject has been frequently recommended to their favorable consideration.

Massachusetts is the only state in which ample provision has been made for insane paupers. A lunatic asylum has been recently erected at Worcester in that state, to which all the insane poor in that commonwealth have been removed; where they are now supported, and receive appropriate medical attendance at the public expense. By the first annual report of the trustees of that asylum, which embraces the time from the admission of the first inmate on the 19th of January, 1833, to the 30th of November, of the same year, a period of about eleven months, it appears that 153 patients had been received into that institution. The time had been too short to allow the various means which had been practised, to produce their full effects in chronic cases; and the peculiar condition of the patients was such as to render the cure of many extremely difficult, if not hopeless. Considerably more than one-half of the whole number of patients came from jails, almshouses, and houses of correction, and about one-third had suffered confinement for periods varying from *ten* to *thirty* years. "Many of these forsaken beings, during the dreadful period of their dungeon life, had been systematically subjected to almost every form of privation and suffering. By this treatment, every regular process of thought had been broken up; confusion had extended itself into every department of intellect; all ideas were deformed, and had lost their true position and relation to each other, while the vital energies of the mind sent abroad tumults of passions, that raged without object and without end. Nowhere in this chaos did the serenity of truth or the confidence of reason prevail."

Yet, notwithstanding all these obstacles, by the application of gentle and judicious means, *thirty-two* of this number had been discharged, fully recovered, and the condition of the others materially improved.

By the reports of the trustees of the Connecticut Retreat at Hartford, in the State of Connecticut, it appears that the efforts of those who have the direction of that institution, in treating the various diseases of the mind, have been crowned with wonderful success. Of the *chronic* cases about one-half, and of the *recent* cases not less than nine-tenths have been entirely restored. The success which has attended the providing of hospitals for the reception of the insane, in neighboring states, should stimulate us to action in this work of benevolence; and while the "empire state" is justly acknowledged to be foremost in the march of internal improvement, and in adopting measures best calculated to contribute to the wealth and prosperity of her citizens, let her not be exposed to the imputation of coldly neglecting the exercise of one of the most interesting and philanthropic of public charities.

But if this subject is to be regarded merely as a question of economy, it is desirable that an asylum should be provided for the insane poor; for, at an extensive hospital provided for that purpose, a large number of patients can be supported, and supplied with medical attendance, at an expense much less than in county poor-houses or private families. The public would also

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be relieved from a heavy expense by the cure of the insane. By the report of the secretary of state, it appears that 602 lunatics have been supported during the last year, in the several poor-houses alone. If we estimate the average expense per annum of supporting each one of this class of paupers at seventy dollars, it produces the amount of $42,140. From the experiments that have been made, it is confidently believed by your committee, that with the superior advantages to be enjoyed at a public hospital, properly conducted, at least thirty-five out of a hundred of these insane paupers might be restored to the full enjoyment of their reason and thus rendered capable of supporting themselves. This would save an annual expense of $14,749.

After a full examination of the facts and circumstances, within the knowledge of your committee, they have come unanimously to the conclusion, to recommend the erection, at the expense of the state, of an asylum for the insane poor, at some central location, to be selected by commissioners with the approbation of the governor, and upon such plan as they shall deem best adapted to the purposes of the institution.

In 1836, two years after this report was made, in response to a memorial from the Medical Society of the State of New York, the Legislature made provision for the first State Lunatic Asylum, which was established at Utica and opened for the reception of patients in January, 1843.

The legislature at its recent session appropriated the sum of $115,000 for the purchase of a new site of one thousand acres for the Utica State Hospital and upon this site there will be constructed a modern hospital for three thousand patients, while the old hospital buildings and the original hospital grounds will be retained as a reception hospital, and for the segregation of about fifteen hundred epileptic or senile cases of insanity.

Let us briefly consider the growth, the present status and the needs of the state hospital system which had its origin in the wisdom of these humane and noble philanthropists of eighty years ago. Exclusive of the Dannemora and Matteawan State Hospitals, which provide for 1238 criminal insane and over which the Commission has only visitorial powers, the direct jurisdiction and control being vested in the Superintendent of State Prisons, there are now fourteen state hospitals for the insane under the jurisdiction of the State Hospital Commission. When Dr. Carlos F. MacDonald and his associates, the Honorable Goodwin Brown and Honorable Henry A. Reeves, entered upon their herculean task of securing the abolition of the " county care " system so that all of the insane might be brought under state care, there were six

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state hospitals, which had been successively established, as follows: Utica, in 1843; Willard, in 1869; Hudson River, in 1871; Middletown, in 1874; Buffalo, in 1880; and Binghamton, in 1881. These hospitals cared for 5633 patients, while 4268 insane still remained in the poorhouses and the county asylums. The St. Lawrence State Hospital was opened for the reception of patients in 1890, the year the State Care Act was passed. Thereafter, the Rochester State Hospital came under the jurisdiction of the Commission in 1891, Kings Park and Long Island in 1895 and Central Islip and Manhattan in 1896. Gowanda was opened in 1898, while the last hospital to be established is Mohansic, which was incorporated in 1910. The total number of insane under treatment in 1897, the year when the remainder of the insane under county care were transferred to state care, was 19,950, and the grand total of the state appropriations for the Lunacy Department in that year was $4,500,000. Ten years later, in 1907, the total number of insane under treatment had increased to 26,548, and the total amount of the appropriations for maintenance, including administration, was $4,777,070, and for new buildings and extraordinary repairs, $722,264, making a grand total of appropriations for that year of $5,492,334. The present year, 1912, the total number of patients in the hospitals is 31,570, the amount appropriated for maintenance, including administration, is $6,719,723.07, and for new buildings and extraordinary repairs, $1,946,924, which, with reappropriations amounting to $19,192.96, makes a grand total of $8,685,839.97. The number of persons employed in the service, exclusive of officers, is 6007. There are in addition 198 resident officers including the medical staffs, and not including vacancies in the service; and in the staff of the Psychiatric Institute and the central office of the Commission and its branches, there are 62 additional officers and employees. I pause to ask you if you do not think that the taxpayers of the State of New York have given abundant evidence that they are animated by the kindliest and most humane sentiments, when they readily devote this enormous sum (about one-sixth of the total revenues of the state) to this charitable purpose? The total appropriations recommended by the Commission this year amounted to $9,639,-144.02, and we were assured by the legislative committees and the Governor that all of these requests would have been granted if

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the revenues of the state had been sufficient to justify the expenditures. The sum actually appropriated and placed at our command will not only maintain the patients and employees in a comfortable and sanitary manner, but will also enable the Commission to commence the construction of three new hospitals, the two large hospitals, Mohansic and the new Utica hospital, and the smaller hospital at Creedmoor in connection with the Long Island State Hospital, besides erecting several new buildings at other hospitals and putting the existing structures in perfect repair.

The ever-animating aim and purpose of the State Hospital Commission, in close coöperation with the able superintendents and medical directors in immediate charge of the hospitals, is to ascertain and put into operation the most advanced, the most humane and the most economical methods of caring for the insane. How can these objects be accomplished in the most satisfactory manner?

The views of the Commission are indicated by its record of recent accomplishments and by the trend of the legislation advocated and passed through its efforts, at the last two sessions of the state legislature. While there should not at any time be an attempt to effect economies by reducing below the proper standard the quantity or the quality of the food supplied to the patients, or of the medical care, nursing or attention to which these unfortunate wards of the state are entitled, we have felt it to be our duty to be sure that the large sums so generously appropriated for our department are so economically spent as to give the state full value for the expenditures made. The Commission, therefore, caused a most thorough and careful study to be made by disinterested expert accountants for the purpose of determining whether the methods of purchasing supplies, of receiving and testing them when purchased, of accounting for them when issued, were in every respect what they should be; and reporting upon the entire system of accounting, with a view to securing the most approved, the most reliable and the simplest methods of doing the work. The Commissioners have as the result of this investigation introduced new business methods which provide for strict supervision of all financial transactions by a system of immediate auditing; standardizing of food stuffs and other merchandise, thereby reducing the cost of such supplies; improving the estimate system

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with a view to saving time and effecting economies; the prevention of waste and of wrong doing by keeping a constant check on quantities, qualities and prices of supplies. In reorganizing the fiscal branch of the department, the Commissioners have improved conditions and arranged for the system of keeping accounts in such a manner as shall at all times disclose the actual financial status of each hospital. The total value of the property of the department has been estimated at about thirty millions of dollars, but an appraisal of the land and buildings has been instituted with a view to confirming this estimate, as no book records of the original cost or purchase prices were formerly kept. For the first time a detailed and accurate inventory of the supplies on hand is now taken at the end of the fiscal year, thereby arriving at a more accurate estimate of the per capita cost of maintenance than has been possible in previous years. The handling of funds by stewards, who act as deputy treasurers, has been regulated, the revenue from different sources now being received at the central office at stated periods and turned over to the state treasury promptly. By establishing immediate cash payments to merchants, the Commission is enabled to avail itself of discounts and thus effect a saving which more than covers the expenses of the officers and clerks employed in the financial department.

The auditor has been directed to make regular inspections of accounts and a comprehensive programme in this work has been outlined. An assistant to act as traveling auditor has been appointed. The system of checking of funds entrusted to stewards, the making of an actual inventory of supplies, the examining of daily reports of materials furnished to repair shops, sewing rooms and other workshops, the comparing of payrolls with time cards, etc., will, I think, have a tendency to minimize waste and prevent irregularities. The Commission is insisting on the avoidance of carelessness in preparing quarterly estimates, and the auditor keeps in close touch with the requirements of each institution, as well as the prevailing market price of supplies. The Commission has given instructions that only such quantities as are needed shall be purchased and that the lowest prices shall be obtained through competition.

There has been organized, pursuant to an amendment to the Insanity Law, passed in 1911, a central purchasing committee for

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the purpose of standardizing and purchasing food supplies and all other merchandise used by the hospitals. Specifications are prepared by this committee, bids are obtained by advertisement and contracts are let to the lowest responsible bidders. This committee consists of three superintendents and two stewards appointed from time to time by the Commission. Experts are consulted regarding the most approved methods of dealing with the different problems. Their advice has already resulted in saving large sums, and the scope of the staple articles purchased in this way has been extended so that the operations of the committee now include nearly all of the goods used in large quantities at the hospitals.

The Commission has also instituted a system of inspection of supplies and of buildings. A large amount of money is expended annually for the repairs to buildings and for the machinery and other equipment. In order to keep itself promptly informed as to the necessary work in this line, and to be guided by the advice of an expert mechanical engineer, the Commission has appointed a qualified inspector whose duty it is to consult with the superintendents and stewards in all matters pertaining to such work and to supervise and report on the work done. An inspector of supplies has also been appointed to examine and pass upon all goods purchased, to test the quality thereof and to ascertain the lowest market prices.

The amendments to the Insanity Law adopted by the legislature of 1912 were carefully considered by the Commission in collaboration with a committee of superintendents and approved by the conference of the superintendents and managers with the Commission, before they were presented to the legislature. They indicate clearly the Commission's present scheme of reorganization and improvement. The most important of these amendments are as follows:

The name of the Commission has been changed from the State Commission in Lunacy to the State Hospital Commission, to complete the policy of the Commission of eliminating the words lunacy, lunatic and asylum. The institutions under our charge are now being conducted on a much higher plane, and operate along hospital rather than asylum lines, and, therefore, the designation, State Hospital Commission, seems to us to be much more

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descriptive of the functions of the Commission than the older designation of the State Commission in Lunacy. The clause providing that the Commission shall hold stated meetings at least once in three months has been stricken out on account of its absurdity. The activities of the Commission have become so great since the adoption of the estimate system and there is such a multiplicity of business as well as medical and legal questions constantly submitted to it for decision, that daily sessions of the Commission are actually held and practically all of the time of the Commissioners is required for the proper conduct of the affairs of the department. Its meetings are held not only in Albany, but also at the hospitals when on tours of inspection of the several institutions.

It was thought that the Commission and the Medical Inspector should have the right to visit any sanitarium or other institution for the purpose of determining whether or not insane persons are confined therein without proper legal authority, and, therefore, the words of limitation permitting visits only to institutions conducted for compensation or hire were stricken out and the Commission now has authority to investigate general hospitals and other charitable institutions, as well as all private sanitariums for the care of the insane.

One of the most important amendments of the year removes all the limitations as to the per capita cost of buildings erected for the care of the insane. The limitation of the rate as formerly prescribed was utterly inadequate for the erection of suitable buildings. Prices of materials and labor have enormously increased in recent years. It seems to the Commission that the needs of the insane should be so carefully considered and buildings to meet these needs provided, in so far as the resources of the state will permit, that the Commission should not be hampered by restrictions as to the per capita cost of the buildings required. In other words, the Commission believes that slow-burning or fireproof construction only should be favored in future and that the cost should be whatever is required to provide such construction.

The department heretofore known as the Board of Alienists has been reorganized and designated the Bureau of Deportation, this being a better description of this body, which is charged with the duty of deporting aliens and removing non-residents from the state when such are found in the State institutions. The amend-

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ment provides for the appointment of a medical examiner who shall act as chairman of the bureau, with such number of medical or lay deputies as may be necessary in the belief that one or more deputies who are not necessarily physicians will add to the efficiency of the Bureau. The requirement that the Bureau shall from time to time report to the Commission such facts as are in its knowledge with reference to the prevalence of insanity is also of importance. The value of such investigations is shown by the fact that approximately 48.02% of the first admissions to the various state hospitals are of foreign birth, and, as nearly as can be estimated at present, there are about seven thousand aliens in the state hospitals who are being cared for at a cost of approximately $190 each or $1,330,000 per annum. The average hospital life of these persons is about eleven years, which indicates the tremendous expenditure devolving upon the State of New York for the maintenance of aliens who should have been prevented by federal enactment, or by stricter enforcement of the laws governing deportation, from becoming permanent residents of the state. The work of the Board of Alienists in the past year has resulted in a saving of about $200,000 and the desirability of perfecting the organization of this body and facilitating its work is clearly obvious. Dr. James V. May, one of my associates, yesterday read to you a valuable and illuminating paper on the subject, "Immigration as a Problem in the State Care of the Insane." It is a question of transcending importance. The State of New York, with the City of New York as the largest port of entry on the seaboard, is annually burdened with an increase in the number of alien insane cared for in its hospitals. The proposition would seem to be indisputable that the federal government, which has entire control of immigration, should either exclude mentally defective immigrants and attend to their deportation, or provide hospitals at its own expense for their care, or reimburse the State of New York for the large expense incurred by its taxpayers in the care and support of aliens, who are admitted to the country without their consent. It would seem to me that an equitable claim amounting to many millions of dollars expended by New York for this purpose has already accrued and should be pressed upon the attention of the national government.

I bespeak your careful consideration of the recommendations made by Dr. May in his paper, but notably of the recommendation

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that commissions or bureaus be established in all the states so that there will be in each state a central authority vested with the necessary power to deal with the questions constantly arising between the several states, and also so that united action can be had to obtain the federal legislation required to prevent the influx of the alien insane, thus avoiding the heavy financial burdens imposed upon other states as well as upon the State of New York.

I have not time to discuss fully the many valuable amendments recently passed which tend to improve the Insanity Law and to facilitate the operations of the department and to aid in accomplishing the high purpose for which it exists. Important legislation for the benefit of the service was advocated by the Commission and passed by the legislature, resulting in an increase in the wages of hospital employees in the hope that a better class of attendants will be secured so that the unfortunates in their charge will receive the best possible care. A retirement bill which provides for a pension system has also been enacted to encourage longer terms of service of capable employees. The labors of the Commission will be further increased by the necessity of administering the retirement fund and determining the many questions which will arise under the act creating it.

In closing, I shall make some bold assertions and recommendations as to medical matters and methods of administration that may not meet your views, and do not seem to fall within the special province of the law Commissioner, but you must bear in mind that you have invited me to give a layman's views of these questions and I feel sure that you will grant me indulgence, and accept my views, sincerely entertained, for whatever they may be worth.

From my observation and study, I am convinced that it is the duty of the Commission to encourage and develop the work of the Psychiatric Institute. The splendid accomplishments of Dr. Adolf Meyer in advancing and elevating the standard of the medical work at the hospitals is now being ably supplemented and carried on by his successor, Dr. August Hoch, and I believe that a separate laboratory building of sufficient size, conveniently arranged and having all the necessary rooms and equipment for clinical instruction and laboratory work, should be constructed at Ward's Island as soon as practicable.

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A few months ago the Commission secured the adoption of a new and liberal salary schedule for the purpose of offering inducements to encourage a higher order of physicians to enter the hospital service. These physicians should all be required to take special courses of instruction at the Psychiatric Institute, and I think it would be wise to so organize the hospital medical staffs that one chief or leading psychiatrist should be given general charge and direction of the medical work at each hospital. He would, of course, always be subject to the direction of the superintendent, whose duties of administration, however, occupy so much of his time that he would surely welcome such assistance. Dr. Meyer in one of his addresses set forth the key note of the plan of the Institute as follows:

> The plan was to create a standard of average medical work such as would insure the same progress in efficiency in the medical work and in the utilization of the chances for progress as had been demonstrated in the unrivaled administrative system of the state hospitals. The institute was not to be a side-show such as so many pathologists in state institutions had been forced to maintain chiefly to ward off the invidious comparisons with general hospitals and the reproach of unprogressiveness. It was to create standards, to help the physicians of rather heterogeneous training to make use of their opportunities, to establish a spirit of co-operation and a sane view of the specific problems rather than merely introduce uncritically the fads and methods of other departments of medicine. Our hospitals have their special opportunities and problems and it is time that they should do their share in accumulating experience with which to improve the actual work done for the patients, to make it directly efficient and to record and strengthen it so that the facts can be used also for prevention. We know what general paralysis and alcoholic insanity mean. What practical steps have our hospitals taken to help in their prevention? In other diseases there are equal chances for the study of the conditions of development of abormal constitutions and possibly their prevention. For all this a good enough standard of average work is a condition of progress.

I stand ready to join with my associates in doing everything in our power to further the success of this work in the hope that the State of New York, with its many advantages, may take the lead in the science of psychiatry, as well as in the care and treatment of the insane.

Another change that I believe would result in benefit would follow an amendment to the Insanity Law that would enable the Commission to treat the hospitals in all respects as one great de-

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partment and transfer a superintendent from one hospital to another as the good of the service might seem to dictate. Situations arise from time to time where construction work is being done, or other considerations appear that suggest the usefulness of the demonstrated superior qualifications of a certain superintendent to meet and cope with the situation then presented in a certain hospital. Transfers and exchanges of this kind are made in several branches of the federal public service, and every great corporation, such as a railway company, exercises the same privilege of exchanging and transferring superintendents for the good of the service. The veto power now vested in the boards of managers, which prevents the transfer or appointment of superintendents without their approval should be abolished. Boards of managers, constituted as they are, of prominent and high-class citizens in every hospital community, unquestionably perform a valuable service in inspecting and reporting upon conditions at the hospital, so that the work is carefully supervised and approved, the public is kept fully informed, abuses are prevented and the superintendents protected from unwarranted attacks; but, being unsalaried and generally very closely occupied with their private affairs, they do not have the time or opportunity to inform themselves as to the general conditions that must be considered in making for the successful administration of the hospital system as a whole.

I would also strike out all distinctions between homeopathic and allopathic hospitals. The Middletown State Homeopathic Hospital and the Gowanda State Homeopathic Hospital are in no sense or way different from the other hospitals of the department. The science and practice of psychiatry are the same in all. The treatment of the insane should be the same whether it be conducted by allopathic, homeopathic or osteopathic physicians. The aim in all cases is to distinguish and classify the patients, with a view to promoting recovery and improvement by good food, regular habits, amusements and salutary occupations. The use of drugs, when necessary, will accomplish its purpose just as well in one hospital as the other, whether administered by a homeopath or an allopath. I would also give the homeopath the same opportunity as the allopath to become a medical Commissioner of the Commission; and I would make them interchangeable at all of the hospitals of the state.

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The perfect system for the care and treatment of the insane is undoubtedly the system prevailing in Germany, notably at Alt-Scherbitz, and some other institutions, as described by Dr. Frederick Peterson, where there is established a psychopathic or reception hospital for the acute cases in the cities with colonies for the chronic or mixed classes of the insane in the adjacent country. This plan will be carried out in the State of New York as far as practicable. We should approach it as nearly as we can consistently with the great financial burden that such a system imposes upon the generous taxpayers. If it were possible to obtain by a bond issue all of the funds required for the perfection of such a system so that a future generation could assume its share of the cost, I would favor the construction of all new hospitals on the Alt-Scherbitz plan, but as there are constitutional limitations that prevent a bond issue for more than one purpose in any one year, and other interests of the state annually absorb this opportunity, it is manifestly incumbent upon the Commission to arrange for the care of the increasing number of patients in the best and most salutary manner consistent with the purse at our command.

The cause of much anxiety to us at the present time is the overcrowding, amounting to 3144 patients, or approximately 10% and existing particularly in the hospitals of the metropolitan district. Te relieve this overcrowding the Commission proposes to push the construction of the Mohansic State Hospital in Westchester County to completion as rapidly as possible and to follow this with the construction of the new Utica State Hospital with all possible speed upon the excellent site which has recently been selected. This site consists of excellent farming land, has unusual transportation facilities both by rail and the new barge canal, has an adequate water supply which can be obtained by gravity from the hills above the site and is easily accessible to the city of Utica, only six miles distant.

I cannot close without making a brief reference to my earnest conviction that the Commission and all national, state and charitable organizations, interested in the care of the insane, throughout the country should devote thoughtful study to the question of the prevention of insanity and the question of exercising a watchful care over patients discharged from the hospitals, so that recurrences may be avoided as much as possible. Practical and careful

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attention to these questions will not only aid the cause of humanity, but will also enable us all to effect economies in the care and treatment of the insane. After-care and prevention must go hand in hand. We are informed that one-half of the patients committed to our hospitals have contracted their mental diseases from syphilis or from the excessive use of alcohol. These are preventable causes, but it will require the devoted and self-sacrificing efforts of sensible and practical men and women to accomplish results in a campaign against these causes. The plan inaugurated by the State Charities Aid Association in the City of New York of employing a qualified agent to observe and assist discharged patients has now been assumed by the Commission and I believe that we ought to extend the plan and scope of this work through an increasing number of agencies throughout the state, for the support of which appropriations should be obtained from the legislature. The wise and humane methods devised to prevent the placing of the alleged insane on the occasion of their first acute attacks in jails, lockups and police stations by requiring the health officers to provide psycopathic or reception wards or other suitable places of detention where the alleged insane may be kept pending commitment, will be encouraged by the Commission until these methods prevail throughout the state.

The Commission is considering a proposed amendment to the law which will provide that in any emergency where an alleged insane person cannot be cared for at home, and there is no suitable place of detention in the city, town or locality for such case, this being particularly the situation in country districts, the alleged insane person may, with the approval of the superintendent, be brought directly to the state hospital of the hospital district in which the patient resides or may be found, and may be detained therein for a period of not more than ten days for the purpose of examination. In order to safeguard the legal rights of such person, the superintendent should be required to forthwith give notice in writing to the county judge of the county wherein the state hospital is located, or to a justice of the Supreme Court of that judicial district, that such person is detained at the hospital for the purpose of examination. If the patient shall, in the opinion of the superintendent, be deemed a proper case for commitment, the superintendent should inform the judge or justice and pro-

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ceedings should follow for the patient's commitment in the usual way. The expenses of the examination, of transportation and the other necessary expenses of bringing the patient to the hospital, and if not committed, of returning him to the place from which he is brought, should be made charges upon the municipality or the village, town or county in which the patient resides or is found, and the expenses in each case should be determined and allowed by the judge or justice of a court of record sitting in the county in which the patient resides or is found.

The subject that you have assigned me is so extensive that I cannot treat it fully within the limits of the time that your kindness has granted. I would weary you beyond measure if I attempted to do so. I know that I have exacted too much of your time and attention already, but I trust that I have presented to you enough to convince you that the care and treatment of the insane in the state hospitals of the State of New York, while not perfect, any more than is any other human agency, is proceeding along humane and scientific lines with the aim and purpose animating all who are charged with the duty of conducting the affairs of the department, to put forth their best endeavors to render this service the best of any service in the state administration, and to give the Empire State the leadership in practical psychiatry.

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THREE MONTHS WITHOUT AND THREE MONTHS WITH A SOCIAL SERVICE WORKER IN THE MENTAL CLINIC AT THE BOSTON DISPENSARY.*

By L. VERNON BRIGGS, M. D.

For some time there has been considerable activity tending toward the prevention of insanity, both from a scientific and practical standpoint. In Massachusetts Dr. E. E. Southard is working out some valuable data to attack the question on a scientific basis. Many of you have undoubtedly read his recent paper which shows that insanity in Massachusetts has varied according to locality. Some localities have furnished a very much larger number of patients than others to our hospitals for the insane. While Dr. Southard is pushing his investigations along the above lines, some of the rest of us are attacking the question from a practical standpoint.

The Boston State Hospital, under Dr. Frost, has a Eugenics Worker; the Danvers State Hospital secured the services of a Eugenics Worker when Dr. Mitchell was in charge; the Northampton State Hospital, under Dr. Houston, has a Field Worker, a female physician who was once connected with the hospital; and the Foxboro State Hospital has a Field Worker in the person of Dr. Horgan. The Mental Clinic of the Boston Dispensary has at the present time both a physician and a Social Worker actively engaged in the treatment of every case.

In the year 1898 a Mental Clinic was established at the Boston Dispensary. Before this date a Neurological Clinic had existed, which included both mental and nervous diseases. Since the above date, a distinct Nerve and a distinct Mental Clinic have been maintained, each with a three-day-a-week service.

When, two and a half years ago, social service was inaugurated at the dispensary, the Mental Clinic made a sporadic use of it in some of its cases, with the result that it became clearly indicated to the physicians, that follow up work and a knowledge of the social environment of mental patients were very significant factors in the efficient treatment of mental diseases.

Before definitely starting social service as an integral part of the clinic, a study was made of the medical records of the new cases of the previous year, with these points in view:

* Report presented at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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1. To ascertain the types of cases coming to the dispensary for mental treatment.

2. Results obtained beyond the routine treatment of clinical service.

The medical records for the year 1911 (without a Social Service Worker) show 122 new cases:

Men.	Women.	Children.
32	67	23

Out of these 122 patients 52 came once to the clinic and 26 came twice, thus making a total of 78 patients, or about 65% who could not possibly have derived marked benefit from dispensary treatment.

At the end of the year, except for the few still reporting, almost nothing was known of the large proportion of patients who had taken the time of the physicians for examination and clinical visits. Based on the above analysis a social worker was placed in the clinic.

The following comparative statistics for three months without and three months with a Social Worker tell an interesting story:

	No. of new cases.	Men.	Women.	Children.
Without a Social Worker.....	26	11	9	6
With a Social Worker.....	86	34	38	14

NOTE.—The increase of patients from 26 to 86 was partly due to the fact that the attendance at all clinics in the dispensary showed an increase. There is, however, no doubt that the increased attendance at the Mental Clinic was influenced by the interest of the Social Worker in the patients both at the clinic and in her visits to their homes.

NATIONALITIES.

Without a Social Worker.		*With a Social Worker.*	
Russian Jews	7	Russian Jews	14
Americans	5	Americans	27
Irish	4	Irish	8
Irish-Americans	3	Irish-Americans	19
English	2	English	1
Canadians	2	Canadians	5
German-Americans	1	Italians	3
Scotch	1	Armenians	2
Roumanian	1	Germans	2
		Swedes	2
		Austrian	1
		Danish	1
		French-Canadian	1
Total	26	Total	86

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OCCUPATIONS.

Without a Social Worker.		*With a Social Worker.*	
Housewives	8	Housewives	20
School children	3	School children	12
Casual laborers	2	Laborers	5
Bookkeeper	1	Bookkeeper	1
Painter	1	Painters	4
Infant	1	Factories	6
Newsboy	1	Cleaners	5
Domestic	1	No employment	3
Insurance agent	1	Waiters	2
Hospital orderly	1	Clerks	2
Harnessmaker	1	Housework	2
Druggist	1	Bottler	1
Boilermaker	1	Shipper	1
Varnisher	1	Carpenter	1
Seamstress	1	Metal work	1
Salesman	1	Freight handler	1
		Janitor	1
		Minister	1
		Watchman	1
		Car shifter	1
		Hatter	1
		Shoemaker	1
		Grocery clerk	1
		Rigger	1
		Clayworker	1
		Writer	1
		Cigarmaker	1
		Florist's boy	1
		Machinist	1
		Shoe cutter	1
		Chore boy	1
		Musician	1
		Chauffeur	1
		Waitress	1
		Mother's helper	1
Total	26	Total	86

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DIAGNOSES.

Without a Social Worker.		*With a Social Worker.*	
Imbecile	3	Imbecile	1
Alcoholism	2	Alcoholism	5
Manic depressive	1	Manic depressive	5
Autointoxication	3	Autointoxication	2+
Neurasthenia	2	Toxæmia	1
Dementia præcox	1	Neurasthenia	1
Acute psychosis	1	Dementia præcox	2
Hemiplegia	1	Depressive states, undifferentiated	5
		Phobias	3
		Hallucinations	1
		Obsessions	1
		Delusions of persecution	1
		Hypochondria	2
		Debility	1
		Drug habit	1
		Epilepsy	2
		Epileptic psychosis	1
		Hysteria	1+
		Hemicrania	1
		Chorea	2
		Insomnia	4+
		Psychasthenia	3
		Constitutional inferiority	6
		Arteriosclerosis	3
		General paralysis	3
		Aphasia + mental deterioration	1
		Cerebral hemorrhage	1
		Paraplegia	1
		Brain tumor	1
		Feeble-minded	3
		Backward children	2
		Defective delinquent	2
		Mongolian idiot	1
		Microcephalic idiot	1
		Normal	2
Deferred diagnoses (46%)	12	Deferred diagnoses (6%)	13

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VISITS PER PATIENT.

Without a Social Worker.			*With a Social Worker.*		
Patients seen once 8	8		Patients seen once 21*	21	
" " twice 4	8		" " twice 12	24	
" " 3 times 6	18		" " 3 times 9	27	
" " 4 " 5	20		" " 4 " 7	28	
			" " 5 " 7	35	
" " 6 " 2	12		" " 6 " 7	42	
" " 7 " 1	7		" " 7 " 8	56	
" " 8 " 1	8		" " 8 " 1	8	
" " 9 " 1	9		" " 9 " 1	9	
			" " 10 " 1	10	
			" " 11 " 1	11	
			" " 12 " 5	60	
			" " 14 " 1	14	
			" " 15 " 2	30	
" " 16 " 1	16		" " 16 " 1	16	
			" " 18 " 1	18	
			" " 19 " 1	19	
	106				428

* Twelve referred from outside agencies for one examination and report only.

The average number of visits per patient in the three months without a Social Worker were 1.7. In the three months with, this average was raised to 5.17. Diagnoses were deferred in the first three months in 46% of the cases; in the second three months in only 6%. The 46% of non-diagnosed cases is largely accounted for by the fact that over half failed to report at the clinic more than twice. The following up of patients by the Social Worker in the second three months reduced the percentage to 6%, which is the average given in the reports of most insane hospitals.

At the end of the three months:

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Without a Social Worker.		*With a Social Worker.*	
New patients 26.		New patients 86.	
1. Under medical treatment at the dispensary	1	1. Under medical treatment at the dispensary	49
2. In institutions	2	2. In hospitals or institutions	3
3. Patients receiving medical treatment at places other than the dispensary	3	3. Private physician	1
4. Patients who have received no further medical treatment, and cases lost track of	20	4. Failing to report regularly	5
		5. Reported from outside agencies for one examination only	12
		6. Discharged recovered	16
Total	26	Total	86

Since a Social Worker has been a part of the Mental Clinic, a social history of each of the 86 new cases has been taken. The medical history and examination by the physician reinforced by this social history determined which cases were to be taken up for intensive social work.

In each case, however, the social facts and conditions were considered by the physician in his treatment of the disease.

During the three months with a Social Service Worker, ending April 1, 1912, there were definitely taken on as social service cases 36 out of the 86 new cases. At the end of the three months these cases stood as follows:

In institutions	3
Referred to the care of other societies	10
Closed	3
Still actively supervised by Social Worker	20
Total	36

The Social Worker sees the patients on the benches and in many instances arranges for the physician to see special cases out of turn; for instance, the man who has only a short leave of absence from work, or the nervous woman who is in no condition to wait for an hour or two listening to other patients discussing their symptoms. In an out-patient department these types have hitherto often been lost.

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The social history enables the physician to prescribe rational treatment and prevents him from giving prescriptions for medicines, hygiene or change of environment or employment which the patient is unable to carry out. The Social Worker is present during the physician's examination of every new patient. If the social service care is needed she visits the home, interviews persons in a position to give information pertinent to the case, notes the environment and standard of living and decides what social action is to be taken.

Just as the physician's knowledge of materia medica is his equipment in the control of physical symptoms so the knowledge of the community resources is the equipment which the Social Worker relates to the conditions which she has to meet. The subtlety and difficulty of her task in applying the right resources to the individual patient is comparable to the careful adaptation of the medical knowledge of the physician.

The following cases will illustrate the function of a Social Worker and her relation to the physician's examination and treatment:

Patient: A girl of 16 years. American born of Irish parentage. A casual factory worker for two years. Diagnosis: chorea with psychosis.

T., at the time of her first visit to the clinic, was in an extremely nervous condition, with marked movements of the body, especially of the face, hands and arms. Frequently she rolled out of bed at night, cried nervously without cause, *fancied that voices called her*, and *often said she wished that she might die*. This condition had existed for about four months. As a child, the patient had been easily frightened, and very shy. In school she had worried about her work and often wished to sit up all night to study. At the age of fourteen she left school and went to work in a nail factory, where she sorted perfect from imperfect nails, at $4.50 per week.

The father and mother were both well, and the younger brother and sister were said to be normal.

The Social Worker's first talk with the mother and patient in the clinic disclosed no financial stress nor unfavorable home conditions. The house was situated in a neighborhood not especially congested, the family occupying four rooms which were large and well ventilated, and hygienic conditions apparently favorable. The family consisted of the father, who worked steadily at $15.00 a week as a baggage transfer man, the mother, who kept house, and three children, the patient sixteen, a boy of seven and a girl of three. Nothing seemed involved save the necessity of regularly reporting at the clinic. Nevertheless, the child failed in four weeks to respond satisfactorily to treatment.

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A second talk between the Social Worker and the mother gave the clue to the real root of the trouble. The father, although steadily at work, was a chronic drunkard and bully, who threw dishes about the room when the food did not please him, and scattered live coals from the stove about the floor with no purpose save to terrify his wife and children. These almost insane rages occurred on an average of four nights a week. Out of his $15.00 wages, six dollars were given weekly to the wife to pay the rent, supply the food and clothe herself and children. The remainder was spent in liquor.

Naturally, the patient, a sensitive and susceptible child, had been reduced to an extreme state of terror, particularly by the threats of violence made against her mother, to whom she was devotedly attached.

An immediate home visit clinched the facts brought out in the above interview—and further talks with relatives of both the man and woman—with friends and with the priest, served to corroborate the information previously gained. Although unpopular with his employers, the man was valued for his energy and the steadiness of his work.

It was naturally manifest that no satisfactory or permanent results could be gained while the patient remained in an environment so unsuited to her temperamental and physical difficulties.

Hence, as a first step, the child was removed to the Children's Hospital at the Dispensary, where she remained for six weeks, during which time, the nervous manifestations became noticeably quieter.

The question of convalescent care was next to be considered, as an immediate return to the bad home conditions would unquestionably be fatal to any lasting improvement. Through a child placing agency, three weeks in the country in a specially selected nurse's home, were arranged for. In the meantime the interest and cooperation of the relatives were aroused to such an extent that an uncle of the child, living under favorable conditions on the shore of Dorchester Bay, offered to take her into his home until the cure seemed complete, and the domestic situation was adjusted. Improvement in the home conditions is noticeable. The man is drinking less and is giving $10.00 a week to the wife, instead of six. The problem is still open for the Social Worker, who is keeping in touch with the home.

At present the patient is leading an active out-door life, walking or driving with her uncle, and sleeping soundly at night in a room which she shares with no one, the windows of which open toward the sea. No traces of nervousness are evident and although she continues to report at the clinic, she is virtually cured. Later, with the hearty cooperation of the mother, a possible course at a trade school is in view, with the aim of securing for the patient a more congenial and healthful occupation.

Patient: A woman of thirty-nine years. Irish. Housewife.

Mrs. P. had been known for many years to the physicians in the Mental Clinic. The medical history was one of autointoxication during pregnancy, ending in acute mania which necessitated hospital commitment to the Worcester State Hospital. This condition accompanied the birth of her

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last five children. Mrs. P. remained in state hospitals for varying periods of time ranging from five months to a year and a half. Nine of her ten children were in the care of the Children's Institutions Department at the expense of the city. One son, 19, lived with the father. Mr. P. was a chronic drunkard and the son inclined to loafing habits.

The first step of the Social Worker in studying this case was to cull the significant facts gained by eight different charitable agencies over a twenty years experience. From these records the consensus of opinion was that the family were hopeless and the obvious solution, Mrs. P's. permanent residence in a hospital for the insane.

The physician in charge of the clinic urged sterilization. To carry out this suggestion involved four weeks of explanation and persuasion by both the doctor and the Social Worker. After two years of continuous supervision by the Medical Social Worker, the following is the present economic and moral status of the P. family.

Mrs. P. has had no recurrence of any abnormal mental symptoms. She has learned the therapeutic value of regular hours of work and of sleep, the need of recreation and the joy of mingling with one's fellows. She has been weaned from the idea that her return to an insane hospital was inevitable. Pride in her personal appearance, in the care of her home, and in her son, have been firmly established. The boy, who suffered perhaps more than anyone else from the intermittently broken home, is now working fairly steadily though he finds it difficult to stay long at any one kind of employment.

During the two years, Mr. P. has had repeated attacks of delirium tremens and has seldom contributed his share toward the support of the household. To protect Mr. P. against himself, the Social Worker induced Mrs. P. to have her husband arrested for non-support. When this had been accomplished, the Social Worker talked the situation over with the judge who decided to send Mr. P. to one of the penal institutions where treatment for alcoholism was to be given. At the end of three months he was released on a year's probation. This has been faithfully kept. At present Mr. P. is working, not drinking, the family is entirely self-supporting, and in a relative sense self-respecting.

Patient: A boy of eleven years. Born in Russia, of Russian-Jewish parentage. In U. S. A. six years. Diagnosis: Acute insanity.

R., at the time of his first visit to the Mental Clinic, was in a manic condition and talked incoherently. He had been for two years in a special class for anemic children in one of the Boston public schools. For some time past he had had frequent disagreements with the teacher. A week before his appearance at the Dispensary the child had returned from school in a much disturbed state. Since that day he had not been able to sleep, and had manifested great nervous depression with hallucinations and had attempted several times to jump from the window.

R's. own story to the physician was broken and confused. He talked much of having been forced by his teacher to go down on his knees, and

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insisted that his hair was on fire. Later he remarked that he was on the dangerous list, and that the teacher had told him that he would never get well. Incoherent references to moving pictures figured in his conversation, although he remembered his name and all other facts connected with his normal life. He appeared a sensitive and intelligent child.

Investigation revealed negative mental conditions throughout the families of both the father and mother. All the other children were normal. A home visit by the Social Worker showed the following condition: Family of seven lived in a four-room tenement in a congested and noisy Jewish section. Father a tailor with an irregular income. The boy was immediately sent under the seven-day commitment law to the psychopathic ward of the Boston State Hospital, where the diagnosis of acute insanity was confirmed and a week later R. was committed to the Danvers State Hospital. A cooperative connection was established between the Social Worker and the hospital physicians at Danvers who were in charge of the case. The following plan resulted after he had sufficiently recovered:

R. was to be placed in the country under the supervision of one of the children's societies for a period of at least six months. Dr. Mitchell, superintendent of the Danvers State Hospital wrote in approval of this arrangement as follows: "I think if you can find some place for him in the country it would be a very excellent plan to follow and he could leave here on a six months' parole with the understanding that he could be returned at any time within six months if there was a recurrence of mental symptoms. I believe that the boy would be better under the healthy country environment than he would in a crowded city district, running the streets as a boy of his activity naturally would be inclined to do. I should be very glad to cooperate with those who are interested, by keeping the boy until you are ready for him, or in any other way. I think an insane hospital of this character is not an ideal place for a boy like young R. when there is no longer any need of his detention. I hope that some satisfactory arrangement may be effected to provide him with a better environment."

This plan of placing R. in the country was carried out with most successful results.

The following is an extract taken from a letter written at the end of three months by Mrs. ———, in whose home in the country the boy had been placed.

"Rises at six o'clock. Breakfast at seven. Dinner at twelve. Supper at five-thirty. Retires from six-thirty to seven o'clock. Drinks milk and has plenty of nourishing food.

"He is plump, has good color, and has not had a sick day since he has been here. He often tells me how strong he feels. He feeds and cares for the hens and brings in the wood and is never happier than when I can find some chores for him to do. He is out in the open air nearly all day and is in a perfectly normal state of mind as far as I can see. In fact he is a very good and happy boy but he would far rather work than play."

At the end of six months he was released from the parole of Danvers State Hospital and returned to his home to report once a month to the Mental Clinic at the Dispensary.

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The social work in this case was not confined entirely to arrangements for the boy, but extended to a preparation in the family for his return, which involved the family's moving to a less congested neighborhood in a Jewish section of a Boston suburb, arranging for his attendance in an open air class, winning his teacher's interest and cooperation, educating the father to a realization of the need of discipline, the value of regular hours for eating and sleeping and of the boy's sleeping alone, and the danger of too exciting recreations.

R. has now been at his own home for six months. At which time the last entry on the medical record states: "Patient in excellent physical and mental condition."

At the Boston Dispensary the present head of the social service department is a graduate of Columbia College besides being thoroughly trained in social service work. The Social Worker who was assigned to the Mental Clinic is a graduate of Radcliffe College and also has had a thorough training in social service work. The work in the Mental Clinic is growing so rapidly that an assistant is now a question of a very short time.

I mention the preparation of these workers because I have previously had untrained volunteer workers and I warn you against them. I am convinced that no person should be allowed to take up the responsibility of social service work until they have been thoroughly trained and accepted as efficient by the heads of the different social service organizations in which they may take permanent positions. Anything under a year's training is dangerous.

I believe that every hospital for the insane in this country should have a Field Worker, a Eugenics Worker and a Social Worker connected with its organization, and each state hospital should have another physician added to their staff who would be a Field Worker or by this addition there could be possibly a rotation of field work by different members of the staff. There should also be added to each hospital organization a Eugenics Worker and a Social Worker. Such an arrangement would do much to stem the tide we are all seeking to check, or in other words, to control and lessen the increase of insanity. The Field Worker would have the advantage of watching the cases in the hospital and selecting the more hopeful ones for a trial outside. He could direct the medical life of the patients after they left the hospital, but would be untrained to bring about changes in

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social conditions, environments or surroundings which would prevent a return to the hospital of the same patient or the coming to the hospital of other cases from the same family or locality. The Social Worker in conjunction with the Field Worker could, I believe, control conditions to a great extent and prevent much of the increase of insanity and educate public opinion to a new point of view concerning the insane, their care and their treatment. The result of such an organization with trained workers would, I believe, be

1. To prevent the commitment of the early cases by directing early medical treatment and improving social conditions.

2. To prevent other members of the family or locality from similar breakdowns.

3. To prevent the return to the hospitals for the insane of many discharged cases.

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STATE CARE OF BOSTON'S INSANE.*

By HENRY P. FROST, M. D.,

Superintendent Boston State Hospital.

This communication to the Association is designed to acquaint the members with what is being done by the State of Massachusetts in the endeavor to provide care and treatment for the insane of the City of Boston in a way to meet the needs of its largest urban population, and, in so far as may be, their wishes.

A very urgent wish on the part of Boston people has been for many years to have in their midst, or easily accessible, an institution of sufficient size to accommodate all Boston patients, or at least all who have friends interested in visiting them; and this very laudable and reasonable desire has, so far as I can learn, never been opposed, though it was year after year disregarded on the score of expense, or rather its fulfilment was deferred for further discussion of the question whether the city should expand for this purpose the Boston Insane Hospital or turn over to the state, which stood ready to assume it, the task of providing for Boston cases as for all others in the commonwealth. This question was satisfactorily settled in 1908, following the masterly and exhaustive report by Dr. Copp, executive officer of the State Board of Insanity, in which the whole situation was carefully reviewed and a broad policy outlined, with recommendations for carrying it out.

With the assurance that the state would enlarge the site and develop upon it, with the existing hospital as a nucleus, an institution of metropolitan size, adequately equipped, to serve the large and important community in which it was centered, the Boston Insane Hospital passed to the control of the state as the Boston State Hospital, and work was at once begun on plans for its enlargement. The board of trustees secured the services of Dr. Copp as superintendent pending a reorganization, and had the

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advantage of his expert advice in formulating a general plan, which is being followed in the development of the institution that is now under way.

Before entering upon a description of this plan, and more particularly of certain features of it which appeal to me as most commendable and as representing distinct forward steps in the treatment of the insane, I desire to briefly review the history of the parent institution.

Among the reports of former years I came across this record of characteristic benevolence and early recognition in this community of the needs of the insane. It is quoted from the will of Thomas Hancock, who died in 1764.

> I give unto the Town of Boston the sum of six hundred pounds lawful money towards erecting and finishing a convenient House for the reception and more comfortable keeping of such unhappy persons as it shall please God, in His providence, to deprive of their reason in any part of this Province; such as are inhabitants of Boston always to have the preference. This sum I order shall be paid into the hands of the Town Treasurer for the time being, viz: One-half thereof in three months after said House shall be begun, and the other half thereof when the same shall be finished and fit for said purpose. And in case said House shall not be built and finished in three years after my decease, I then declare this legacy to be void; or if I should in my lifetime erect it, this bequest then to be void.
>
> Dated March 5, 1763.

This legacy was declined by the selectmen of Boston for the reason that there were not enough insane persons in the province to call for the erection of such a house.

Seventy-five years after this generous proposal was declined, however, there was urgent need of such a house, owing to the over-crowded condition of the hospital at Worcester, opened but a few years before, necessitating the return of a large number of patients to the alms house and house of correction; and this need was recognized in the spirit which has always animated Boston in the care of her dependents, Mayor Elliot reporting that while the law required Boston to provide a *receptacle* for the insane of Suffolk County, humanity required her to provide a *hospital* for them. Thus it came about that in 1839 there was opened for the reception of patients the Boston Lunatic Hospital, the first municipal hospital for the insane in America, and the twelfth institution of this class in the country.

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Presided over successively by Dr. John S. Butler, Dr. Charles H. Stedman, Dr. Clement A. Walker, and Dr. Theodore W. Fisher, all of whose names appear on the honor roll of our profession and of this society, the main purpose of the institution, its function of treatment and cure of those committed to its care, was ever kept prominently to the fore, reiterated with emphasis and illustrated by the adoption of the most advanced methods of the day in every stage of its history. Thus, in one of the earliest of Dr. Butler's reports reference is made to the beneficial effects of shower baths, even though these had to be administered with a garden watering pot in the absence of any more suitable equipment, to the necessity of proper classification, and to the value of occupation and diversion. The importance of early treatment and the advantage to the patients of easy admission to the hospital with the minimum of publicity and with avoidance of delay due to red tape requirements received an unusual share of attention.

It was doubtless due, in a large measure, to this humane and liberal policy of the superintendent that as early as 1855 the practice of committing patients in open court was discontinued and a private hearing by the judge substituted, and that in urgent cases a patient might be sent immediately to the hospital without waiting for the papers to be completed. Emergency certificates, securing the admission of patients at any hour of the night and on Sundays and holidays, were extensively used, as many as 40 per cent of the admissions in 1881 being in this form, at which time it was noted that a bill was before the legislature extending this useful privilege to the state hospitals. Several years later the record reads that the Boston Hospital received ten times as many emergency cases as any of the state hospitals, and also more voluntary patients. I believe one may fairly assume that the liberal attitude in this matter so early defined and through a long period of years exemplified was fruitful in moulding public opinion and judicial and legislative action, and so was instrumental in obtaining for the benefit of the mentally sick the unusual facilities for early and informal treatment now available in Boston and at the other hospitals in Massachusetts.

The appointment of a pathologist in 1881, the institution of clinics for medical students at the same time, and a few years later the admission of dental students to care for the patients' teeth,

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and the establishment of a training school for attendants in 1884, are among the evidences of progressive and scientific management which, combined with unfailing kindness and consideration for patients and their friends, constitute a body of worthy tradition and a record of work well done, to which I feel that it is an honor to succeed, and which it would be a pleasing task to chronicle more fully did time permit. But I must conclude this phase of my subject with the reproduction of a certificate of character from a source which gives it value. Charles Dickens, in "American Notes," has this to say of his visit to the hospital, in 1842:

At South Boston, as it is called, in a situation excellently adapted for the purpose, several charitable institutions are clustered together. One of these is the hospital for the insane; admirably conducted on those enlightened principles of conciliation and kindness which twenty years ago would have been worse than heretical, and which have been acted upon with so much success in our own pauper asylum at Hanwell. "Evince a desire to show some confidence, and repose some trust, even in mad people," said the resident physician, as we walked along the galleries, his patients flocking round us unrestrained. Of those who deny or doubt the wisdom of this maxim after witnessing its effects, if there be such people still alive, I can only say that I hope I may never be summoned as a juryman on a commission of lunacy whereof they are the subjects; for I should certainly find them out of their senses, on such evidence alone.

Each ward in this institution is shaped like a long gallery or hall, with the dormitories of the patients opening from it on either hand. Here they work, read, play skittles and other games; and, when the weather does not admit of their taking exercise out of doors, pass the day together. In one of these rooms, seated, calmly, and quite as a matter of course, among a throng of mad-women, black and white, were the physician's wife and another lady, with a couple of children. These ladies were graceful and handsome; and it was not difficult to perceive at a glance that even their presence there had a highly beneficial influence on the patients who were grouped about them.

* * * * * * * * *

Every patient in this asylum sits down to dinner every day with a knife and fork; and in the midst of them sits the gentleman whose manner of dealing with his charges I have just described. At every meal, moral influence alone restrains the more violent among them from cutting the throats of the rest; but the effect of that influence is reduced to an absolute certainty, and is found, even as a measure of restraint, to say nothing of it as a means of cure, a hundred times more efficacious than all the straight-waistcoats, fetters, and handcuffs that ignorance, prejudice and cruelty have manufactured since the creation of the world.

In the labor department every patient is as freely trusted with the tools of his trade as if he were a sane man. In the garden and on the farm they

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work with spades, rakes and hoes. For amusement they walk, run, fish, paint, read, and ride out to take the air in carriages provided for the purpose. They have among themselves a sewing society to make clothes for the poor, which holds meetings, passes resolutions, never comes to fisticuffs or bowie-knives as sane assemblies have been known to do elsewhere; and conducts all its proceedings with the greatest decorum. The irritability which would otherwise be expended on their own flesh, clothes and furniture is dissipated in these pursuits. They are cheerful, tranquil and healthy.

Once a week they have a ball, in which the doctor and his family, with all the nurses and attendants, take an active part. Dances and marches are performed alternately, to the enlivening strains of a piano; and now and then some gentleman or lady (whose proficiency has been previously ascertained) obliges the company with a song: nor does it ever degenerate, at a tender crisis, into a screech or howl; wherein, I must confess, I should have thought the danger lay. At an early hour they all meet together for these festive purposes; at eight o'clock refreshments are served; and at nine they separate.

* * * * * * * * * *

It is obvious that one great feature of this system is the inculcation and encouragement, even among such unhappy persons, of a decent self-respect. Something of the same spirit pervades all the institutions at South Boston.

During fifty years the original building was twice enlarged; first in 1846, by the addition of dormitory wings, said to have been the first instance in this country of departure from the accepted rule of single rooms, and in 1883, by dining room extensions, increasing the capacity of the hospital to two hundred beds. Over crowding was almost constant, relieved temporarily by the opening of each of the state hospitals in succession, but quickly reproduced owing to the earnest effort made to furnish treatment for every patient who could possibly be admitted. There were repeated appeals, beginning in 1852, for the establishment of a larger hospital on a farm in the suburbs, the original site in South Boston being too contracted for growth, and, from the building up of the neighborhood, ill suited for the purpose. Unanswerable arguments for this change were advanced year after year by Dr. Walker and later by Dr. Fisher, and several times the plan seemed on the point of fulfilment, but this radical step was not taken until 1893, when new hospital buildings were occupied at Pierce Farm, and the translated institution, henceforth the Boston Insane Hospital, was re-established on a site such as had been so long desired. On an adjoining tract, Austin Farm, the hospital

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had previously cared for some two hundred patients of the chronic class in outlying wards of simple and inexpensive construction, and concurrently with the erection of buildings on the other tract additional pavilions in this group developed it into a department for women, while the Pierce Farm group became the department for men.

Dr. Fisher, in an illustrated paper published in the JOURNAL OF INSANITY, described and pictured the new hospital buildings, which were novel in construction and design, being of wood and cement in English half timbered style, very picturesque and attractive in appearance. Ten years later, under the superintendency of Dr. Edward B. Lane, three brick buildings, well planned and of high class construction, were added to the women's department for the treatment of acute and hospital cases, these representing the first steps in a program of extension and growth.

The Boston State Hospital dates from December 1, 1908, at which time, with a capacity of 764 beds, it consisted of eight ward buildings, above mentioned, grouped in two separate departments approximately a half mile apart. The state acquired seventy-nine acres of adjoining land extending to the surrounding streets, giving the institution an area of 232 acres, consisting of two irregularly shaped plateaus with an intervening tract of lowland, all of excellent quality and on the high ground well wooded. The tract is divided by a much travelled automobile highway into two unequal parts, on the smaller of which, the one more accessible to the public, it is proposed to develop a reception group for both sexes, with the offices for administration and the principal service buildings, such as laundry, stores, bakery, etc., and on the larger portion a custodial and infirmary group, flanked by three groups of cottages, a group for farm workers and an industrial group for men and women. The plan contemplates an institution for approximately two thousand patients, to which may be added, if desirable, a colony located not too far away in the country, and also a sanatorium or convalescent home on a detached site, where may be received not only convalescent patients from the main hospital, but also voluntary cases from the community who could be treated to better advantage if not obliged to come in contact with the general hospital population.

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The arrangement of the buildings is in part determined by the topography of the site as well as by the necessity of conforming to beginnings already made on somewhat different schemes, but it is believed that all essential requirements have been satisfied. For safety and convenience of intercommunication, it will be necessary to construct subways under the intersecting street. The entire institution is to be supplied with heat, light and power from a central power plant located between the two main groups.

There have been erected in conformity with this general plan the following buildings: An infirmary accommodating three hundred patients, with quarters for physicians and nurses; an addition to the women's excited ward, providing treatment facilities including hydrotherapy; a laundry and industrial building. Plans are completed and appropriations are requested this year for a building for disturbed women, a nurses' home, a building for stores, cold storage and a bakery, and for dairy and farm barns and stables, while plans for all other structures proposed are in various stages of preparation and can be ready for building next year if funds are forthcoming for the immediate completion of the plant, as has been recommended by Governor Foss in a recent message to the legislature.

The account so far given describes in process of evolution a hospital for the insane, presenting no very distinctive features, nothing which is lacking in any thoroughly modern institution of corresponding size and activity of service. I now invite your attention to the psychopathic department of this hospital, which does represent advanced ideas in the care, treatment and study of mental disease, and stands for what the commonwealth is prepared to do in the attempt to deal radically with a problem the social and economic importance of which is increasingly recognized.

Dr. Copp said in his report previously mentioned: "The hospital idea is expressed in the psychopathic hospital for the acute and curable insane. . . . . It seeks the most enlightened treatment of mental disease; broadest knowledge of insanity by scientific research into its nature, causes and results; amplest opportunity for clinical study and instruction in mental diseases; to the end that the general practitioner of medicine may become competent to treat incipient mental disease in the most curable stage, or prevent its development by advice which he alone is

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privileged to give; public provision for the voluntary mental patient without a stigma of insanity; out patient service for the poor who need instruction and counsel in mental hygiene, prevention of mental disease and after care of dismissed patients, and for the early discovery of dangerous tendencies of the mentally deranged in the community in season to safeguard against violence. . . . . It is the paramount duty of the state to proceed at once to meet the reasonable demands of this great center of nearly one-half the state's population (referring to the Metropolitan District), by erecting in this order: (1) A psychopathic hospital for 120 beds in the city; (2) a voluntary and convalescent branch in the suburbs; (3) a custodial and infirmary center within a ten-cent trolley ride; (4) a farm colony within a twenty-five-cent trolley ride."

Following this recommendation, the legislature of 1909 appropriated $600,000 for the purchase of a suitable site and the erection and equipment of a hospital in the City of Boston for the first care and observation of mental patients and the treatment of acute and curable mental disease, and for research into the nature, causes, and results of insanity. This sum was expended under the direction of the trustees of the Boston State Hospital, and the hospital which is now, June 1, completed and ready for opening is known as the psychopathic department of the Boston State Hospital. The site selected is in a central and easily accessible location, contiguous to the Harvard Medical School, the new Peter Bent Brigham Hospital, and the group of hospitals and research institutions which dominate that neighborhood.

The building, which is four stories high, of brick and terra-cotta, occupies a spacious corner lot, commands a pleasing outlook across the parkway and has unrestricted air and sunlight. The arrangement is such that all excited and noisy patients can be cared for in a pavilion extending to the rear, well removed from neighboring residences; and a special system of forced ventilation permits closed windows in this section, these being double glazed to prevent the transmission of noise. The entrance for patients is from an ambulance court in the rear, giving access to the admitting office and reception wards on the first floor of the pavilion where provision is made for seven patients of each sex in a dormitory and two single rooms, with toilet, bath, fumigating

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chamber and other utilities. On the second and third floors of the pavilion are wards for men and women respectively, each accommodating twenty-four patients, seven of these in single rooms at the extreme end of the section, the remainder in small wards of four and six beds each. Each of these wards has six tubs for prolonged baths, an examination and treatment room, and a clinical laboratory. There are in this part of the building no day rooms or dining rooms, the design being to treat the patients in bed, but there is a solarium and roof garden on the fourth floor, which is reached by elevator.

In the front portion of the building are reception rooms, offices, living quarters for officers and nurses, an extensive laboratory suite, and an out-patient or social service department. These features occupy the first, second and third floors; the fourth contains two wards for twenty patients of each sex, which will be devoted to cases requiring special study and treatment, while the reception wards will take care of a more rapidly changing population.

The hospital is to be something more than a receiving department for the main hospital, though that is one of its functions. In the first place it will receive without commitment, for temporary care and observation, all patients suffering from "delirium, mania, mental confusion, delusions or hallucinations, who may be arrested by, or come under the care or protection of the police of the City of Boston . . . ." This is done under authority given by a law passed in 1910 largely through the efforts of Dr. L. Vernon Briggs of Boston, under the operation of which no insane person is confined in police station or jail, as had previously been the practice. In addition, on application by physicians and certain specified officials, any suitable case may be received for seven days observation, without the intervention of the police, besides voluntary cases; the object being to influence patients and their friends to regard the hospital as on the same footing as a general hospital, freely open to all who need its service, with easy rules for admission, so far as possible on the voluntary basis. In this respect the provision of first-class hospital treatment for patients pending examination and commitment Massachusetts has taken a most advanced position, one which rounds out her system of state care to completeness as has not been done in any other state

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so far as I am aware, the duty of caring for the insane up to the time of their formal commitment being quite generally imposed upon the local authorities. The assumption of this extra burden of expense by the state is a most logical application of the principle of state care which we may now expect to see widely extended.

The careful study of mental disease by means of adequate organization and equipment, untrammeled by the conflicting demands of routine institution affairs, and intensive treatment by the best methods known to modern medicine, constitute the second function, and the most important one of the hospital. With the end in view that results of real value shall ensue from efforts in this direction, much care has been taken to organize the scientific work on a plane of highest efficiency. When I say that Dr. Southard, Professor of Neuro-Pathology in the Harvard Medical School and Pathologist to the State Board of Insanity, has been secured as director, I need add nothing by way of assurance that treatment and research will be pursued with all the resources of a quite unusual equipment of proved effectiveness. The director will co-ordinate and direct the scientific work under several heads of departments, who will be assisted by a full corps of physicians, internes, and clinical assistants, sufficient to assure for each case the most careful individualized examination and treatment. The out-patient service, for which adequate structural provision has been made, is to be an important feature of the hospital program which it is hoped will be able to touch vitally the problem of prevention. Details regarding all these matters are left for future communications by the director, from whom you will hear in due time, I confidently expect, reports informing and stimulating.

The maintenance cost of this department will necessarily exceed that of any existing public hospital for the insane, but considerations of this sort have had secondary place in all discussions of the plan, the firm conviction prevailing that real effectiveness, at whatever cost, will prove to be true economy in the end.

To summarize and add to what has been said: State care of Boston's insane is carrying into effect long cherished plans for a complete institution with proper means for classification and treatment of all Boston patients within easy reach of their families and friends. It is, by spending more money for the purpose,

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giving them better care and treatment, notably in the way of an increased ratio of nurses and attendants and better compensation for these employees, thereby retaining their services after they have gained experience and had the advantage of training. It has made provision, in a manner as yet unequalled, for the immediate care and treatment of the alleged insane pending commitment, completely eliminating the use of police stations and correctional institutions for this purpose. It has taken steps to stimulate and support research in mental diseases, and it is reaching out into the community a helping hand to borderline and incipient cases and taking part in a practical way in the campaign for prevention of insanity.

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IMMIGRATION AS A PROBLEM IN THE STATE CARE OF THE INSANE.*

By JAMES V. MAY, M.D.,

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A history of the development of western civilization is to a large extent merely a study of the assimilation of the various racial elements represented in its composition. Founded as our republic was by those who fled from religious and political persecution abroad, our doors have always been open to the oppressed of other lands. The formative process consisted largely in a transplantation and reorganization of established Anglo-Saxon institutions. The introduction of discordant elements from other races however soon gave rise to social and political problems which threatened the equilibrium of our newly established government and became a serious menace to its existence. This was illustrated by the activities of the "Native American" or "Know Nothing" party, which was a considerable factor in American politics during the thirty years immediately preceding the Civil War, on one occasion being represented by over forty members in the lower house.

This condition of unrest led to the consideration by congress in 1838 of the necessity of preventing the introduction of paupers and other undesirable persons from foreign countries. The Judiciary Committee, moreover, recommended legislation prohibiting the entrance of idiots, lunatics and those suffering from incurable diseases, or convicted of crime. The action of several continental governments in pardoning murderers with the provision that they should emigrate to the United States, led to the adoption of a resolution of protest in 1860 and two years later a statute encouraging immigration was repealed. The necessity of some method of adequate supervision resulted eventually in the act of 1882, since which time immigration has been a subject of wide discussion and of repeated legislation.

*Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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The importance of these considerations is well illustrated by the work of the commission appointed for the careful investigation and study of this serious problem. They showed that the total number of immigrants from 1820 to 1830 was only 124,640. The statistics for subsequent years were as follows:

From	1831-1840	528,721
From	1841-1850	1,604,805
From	1851-1860	2,648,912
From	1861-1870	2,369,878
From	1871-1880	2,812,191
From	1881-1890	5,246,613
From	1891-1900	3,687,564
From	1901-1910	8,795,386

The commission found that of 68,942 foreign born males employed in the various mining and manufacturing industries and who had been in the United States for a period of five years or more, only 33.3 per cent had obtained naturalization papers. Of 246,673 of the same class, representing non-English speaking races, only 53.2 per cent had learned our language. The report of the Commissioner General of Immigration shows that of 719,906 immigrants over fourteen years of age and admitted from 1899 to 1909, 26.6 per cent could neither read nor write, and 29.8 per cent had no occupation. The following tabulation shows the percentage of the population of the United States, by decades, that were natives of other countries:

1850	9.7 per cent
1860	13.2 per cent
1870	14.4 per cent
1880	13.3 per cent
1890	14.7 per cent
1900	13.6 per cent

The foreign born population of New York State was as follows:

1850	21.2 per cent
1860	25.8 per cent
1870	26.0 per cent
1880	23.8 per cent
1890	26.2 per cent
1900	26.1 per cent
1910	29.9 per cent

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The efforts of those opposed to an indiscriminate entrance of undesirable aliens finally resulted in legislative restrictions in the enactment of August 3, 1882. This act charged the Secretary of the Treasury with the duty of supervising immigration and prohibited the landing of lunatics, idiots and persons liable to become a public charge. The provisions for the execution of this law were inadequate and suggested further restrictions, which were imposed by Chapter 551 of the Laws of 1891 (March 3). This made it a misdemeanor to bring in any of the above proscribed classes and imposed a fine of over one thousand dollars for anyone guilty of so doing. Section 11 provided that any aliens entering in violation of law could be returned at any time within one year thereafter, at the expense of the person or persons, vessels, transportation company or corporation responsible for their entry, and further, that those becoming public charges within one year from causes existing prior to landing should be considered as having entered in violation of law. The provisions of this statute were unchanged until the act of March 3, 1903. This excluded persons insane within five years previous to landing, those having had two or more previous attacks at any time, paupers and all others liable to become a public charge. Section 17 delegated to the officers of the United States Marine Hospital Service the duty of determining the mental condition of all immigrants. Section 20 provided that aliens coming to the United States in violation of law, who were found to be public charges from causes existing prior to landing, could be deported at any time within two years. Section 21 authorized the Secretary of Commerce and Labor to deport any alien within three years if entering in violation of the act.

One of the important landmarks in the history of legislation regarding immigration is the amendment of February 20, 1907. Section 2 made mandatory the exclusion of idiots, imbeciles, the feeble-minded, epileptics, insane, all who had been insane within five years, and persons having had two or more attacks of insanity at any time, or who were likely to become a public charge, as well as individuals not comprehended in the foregoing excluded classes, but found to be suffering from mental or physical defects of such a nature as to affect their ability to earn a living. Section

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20 provided that an alien entering in violation of law or becoming a public charge from causes existing prior to landing should, upon the warrant of the Secretary of Commerce and Labor, be taken into custody and deported to the country from whence he came at any time within three years after the date of his entry into the United States. The cost of this removal was to be a charge upon the owners of the vessel or transportation line immediately responsible. When the mental or physical condition of the alien was such as to require personal care or attention, the Secretary of Commerce and Labor was authorized to employ a suitable person for that purpose. The practical operation of the law was further provided for by rules and regulations to be formulated by the Commissioner General of Immigration. In cases becoming a public charge from prior causes (Immigration Rule 22, subdivision 3) the application for deportation must be accompanied by—

(a) An explicit statement that the alien is a public charge, where and how, and if in an institution the date of admission thereto.

(b) A full and accurate statement of the alien's disability, mental or physical; also whether or not a complete cure is possible, and if "Yes," when, and if not, whether a partial cure may be expected, and to what extent the alien will thereafter be self-supporting. Also in insane cases if recovered or apparently recovered from the attack whether new attacks are to be expected.

(c) Whether or not the disabilities described constitute the sole cause why the alien is a public charge; any other causes to be stated.

(d) Whether the causes which render the alien a public charge existed prior to landing, or arose subsequent thereto, and in the former case the reason in detail justifying such a conclusion.

When the Bureau so directs the application must be further accompanied by a complete clinical or general history as shown by hospital records, and the certification of an officer of the Public Health and Marine Hospital Service may also be required. A large percentage of the cases deported have been those becoming insane from causes existing prior to landing. The fact that an alien has manifested symptoms of dementia præcox subsequent to his arrival has heretofore been construed as *ipso facto* evidence of the existence of constitutional causes, an argument not disputed by reputable medical authorities. A recent decision of the Solicitor of the Department, which has been approved by the Attorney General of the United States, interprets this as a mere matter of

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medical opinion which must be substantiated by evidence showing that insanity actually existed before entry into the United States. This has already resulted in the cancellation of many warrants for the removal of patients whose condition is due to inherent development defects and will materially reduce the number of deportations.

The State of New York has long appreciated the necessity of some action looking toward a more efficient enforcement of existing laws. As a result of the activities of the Commission in Lunacy, a board of alienists was established by chapter 326 of the Laws of 1904. This provided for the maintenance of three examiners at the port of New York for the purpose of ascertaining whether immigrants entering at that place were insane, idiots, imbecile or epileptics. It has no power of exclusion, which is vested solely in the Bureau of Immigration, and has not the authority, except as a matter of courtesy on the part of the United States Government, to inspect immigrants at Ellis Island. This board has accomplished a great deal, however, in bringing about the deportation of those who have entered in violation of law, or who have become insane within three years subsequent to entering and from causes existing prior to their landing. During the year 1910, 613 aliens were removed to other countries and in 1911, 784 were deported.

In view of the existing legislation, the question naturally arises as to the effect it has had on preventing the entrance of the insane and others of the proscribed classes. This question can best be answered by stating the number of these cases in our public institutions. We have little information prior to 1903 which is reliable. The United States Census Bureau in its report of 1904 on the insane in public institutions shows that of the 140,312 in hospitals on December 31, 1903, 90,297, or 65.7 per cent, were born in the United States, and 47,078, or 34.3 per cent, were of foreign birth. Of the 46,300 admitted during 1904, 31,577, or 70.2 per cent, were natives of this country and 13.405, or 29.8 per cent, were foreigners.

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The percentage of the foreign born in state hospitals in the United States in December, 1903, was as follows:

In New York	46.9 per cent
In Massachusetts	42.0 per cent
In New Jersey	39.0 per cent
In Pennsylvania	30.0 per cent
In District of Columbia	36.7 per cent
In Connecticut	35.4 per cent
In Michigan	43.5 per cent
In Illinois	41.6 per cent
In Wisconsin	50.9 per cent
In Minnesota	63.5 per cent
In North Dakota	68.4 per cent
In South Dakota	49.9 per cent
In Montana	57.8 per cent
In Nevada	63.1 per cent

These statistics will show that the presence of a surprising percentage of foreigners was quite general in all parts of the country. Of the 99,297 in the hospitals at this same time, 50,435, or 72.7 per cent, were of native parentage; 14,975, or 21.6 per cent, of foreign and 3,950, or 5.7 per cent, of mixed parentage. Investigation showed that 14,318 patients, or 54.7 per cent, in the New York State institutions were natives and 11,858, or 45.3 per cent, of foreign birth. In February, 1909, there were 28,547 patients in state hospitals, 42.9 per cent of whom were born in other countries. A further study of this subject in February, 1912, showed that of 31,432 patients, 13,163, or 41.9 per cent, were of foreign birth. The fact that the foreign born population had increased from 26 per cent in 1900 to 29.9 per cent in 1910 would strongly suggest that it plays an important role in the increase in the number of our insane. In 1903 the ratio of the foreign born to the native born in our state institutions was 2.44 to 1 and in 1912, 1.69 to 1.

Dependent merely on the fact that the countries contributing to our immigration now have been small factors heretofore, the nationality of the foreign born admitted has varied from time to time. There has been a decrease in the number from Ireland, Germany, England and Wales, and an increase in the number from Russia, Poland, Italy, Hungary and Bohemia. It is interesting to note that the Italians who contribute but five per cent to the civil hospitals, form 23.9 per cent of the foreign born in the hos-

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pitals for criminal insane and 36.6 per cent of the foreign born population of the prisons. The female sex predominates in the foreign as well as the native element. The census of February 10, 1912, shows the average hospital residence of the foreign born to be 9.85 years.

An analysis of the first admissions to our state hospitals during 1911 will show the influences of immigration. During this year, 2923, or 51.28 per cent, were of native birth; and 2737, or 48.02 per cent, were of foreign birth out of the total of 5700; 4218, or 74 per cent, were of foreign birth or parentage. This element which composes 29 per cent of the population of the state, contributed 48.02 per cent of the first admissions, while only 51.28 per cent came from the 70 per cent of the native born of the state. In other words, "The frequency of insanity among the foreign born throughout the state is 2.19 times as great as among the native born." (Pollock.)

In 1911 the following were the percentages of first admissions from the countries mentioned:

Ireland	21.4 per cent
Germany	17.7 per cent
Russia and Poland	16.7 per cent
Italy	9.5 per cent
Austria	8.0 per cent

Of these first admissions, 509 were committed during their first five years residence in the country. Forty per cent of the foreign born first admissions have less than the common school education, as contrasted with 17.5 per cent in the natives of the United States. The largest percentage of illiterates are coming from Austria, Italy, Russia and Poland. Four per cent of the foreign born are under twenty years and 56.8 per cent between the ages of 20 and 45.

Of the first admissions (foreign born), 14.4 per cent were cases of dementia præcox; 14 per cent of general paresis; 11.2 per cent of senile psychoses; 11.8 per cent of manic-depressive insanity; 10.2 per cent of alcoholic psychoses; 4.1 per cent of depressions undifferentiated; 4.2 per cent of paranoic conditions and 6.2 per cent were unclassified. The proportion of the various psychoses compares quite closely with that of the native born in the forms of insanity represented. General paresis and alcoholic

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conditions show a higher percentage in the foreign than in the native population. The tendency towards alcoholism is twice as great in the foreign born and the frequency of general paresis more than twice as great. Immigrants from France, Canada, Scotland, and Germany show numerous cases of general paresis, while those from Ireland, Canada, England, Scandinavia and France show higher percentages of alcoholic psychoses. Alcoholism is unusual in the Russians, Italians, Austrians and Hungarians.

Thirty-six and eight-tenths of the readmissions were foreign born. Only 12.4 per cent of the readmissions from New York city were of native parentage.

These statistics are, I think, sufficient to demonstrate conclusively that the burden imposed upon the state in providing proper accommodations for the insane of other countries is one to which too much importance cannot be attached. The financial aspects of this undertaking should not be overlooked.

To arrive at any intelligent conclusions, the cost of the hospital plant in lands, buildings and equipment must be considered. Maintenance, including food, clothing and medical treatment, must be computed. The cost of the administration should not be omitted. It will readily be seen that the length of hospital residence is a factor of paramount importance. The comptroller has recently appraised the value of eight of the state hospital plants. A careful investigation shows that they represent a per capita investment of $983.00, which is a low estimate. We can conservatively approximate this at one thousand dollars. This represents the cost to the state in providing institutions for the care of the insane, a factor which cannot be disregarded. If we consider interest on the money invested, which would seem fair, at four per cent, and estimate the amortization cost at three per cent to cover the depreciation of buildings, equipment, loss from fire, etc., we have a total charge of seven per cent on the original investment.

The average per capita cost for maintenance during the last five years was $188.14. The cost of administration, including the State Hospital Commission, the necessary supervision and inspection of institutions, deportation of patients, etc., averaged $4.27 during the last five years. The total cost of this care to the State of New York can therefore be summarized as follows:

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Interest on investment in buildings and equipment	$ 70.00
Maintenance	188.14
Administration	4.27
Total annual cost	$262.41

The statistics of foreign born in the hospitals in February, 1912, show the average hospital residence of 13,613 to be 9.85 years. A conservative estimate of the complete institution life would be very nearly, if not over, 11 years. At this rate, the cost of caring for one patient can safely be computed at $2,882.00, and interest at four per cent for this length of time would bring this amount to $3,516.00. Based on these figures, the maintenance of the foreign born in all the state hospitals would amount to the annual sum of $3,448,706.00. At the rate of $262.41 per patient, the 2737 admitted in 1911 would involve a cost to the state in eleven years of $7,888,034. Approximately one-fourth of our present hospital population is made up of aliens. The influence of immigration on the problems connected with the care of the insane has not manifested itself in New York alone. It has enormously increased the expense of caring for the dependent classes in every part of the country.

The great influx of mental defectives from other lands has filled our institutions necessitating the erection of additional buildings and new hospitals at a tremendous cost. When this problem assumes such proportions that it becomes necessary for the State of New York to devote practically one-fifth of its revenues to care for an insane population, 41 per cent of which is of foreign birth, active measures are certainly indicated. Either the present laws regarding immigration are inadequate and the provisions for the return of those who become a burden upon the state within a short time subsequent to their landing are unsatisfactory, or else the responsibility for the existing deplorable conditions must be attributed to negligence on the part of the representatives of the Federal Government.

Concerted action by the various states concerned is absolutely necessary if we are to accomplish any results. It is unfortunate that the care of the insane and the supervision of the institutions provided for their welfare has not been delegated in all of the states to a commission, bureau or department of competent juris-

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diction and adequate authority conferred by law. Legislation with this in view should be introduced at the earliest possible moment. No more important work can be undertaken by the American Medico-Psychological Association, which has already been such a powerful factor in the progress of psychiatry. This does not necessarily contemplate the maintenance of expensive administrative establishments in communities having only a few institutions or where the number of committed cases is small. Under such circumstances the superintendents of the various hospitals, or even one if necessary, could be designated by law to assume the supervision of the insane, insure the enforcement of legislation enacted for their benefit and represent the state in determining the responsibility for the care of persons whose legal residence is questionable. For this latter purpose alone the existence of such a body is sufficiently warranted. It frequently happens that the removal of the insane from one state to another has to be arranged with municipal or county authorities, owing to the absence of any state department authorized to act in such important matters. Such a movement should be fostered by this Association. Although it includes in its membership the superintendents or representatives of practically all of our institutions, it cannot assume the functions of an official organization for the promotion of federal legislation and the adjustment of the questions constantly arising in the relations between individual states.

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KORSAKOW'S SYNDROME WITH SYNOPSIS OF CASES.*

By F. B. CLARKE, M. D.,
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Korsakow's syndrome is a name applied to a certain group of symptoms any one of which may occur in other syndromes, there being none that are definitely characteristic. However, we are accustomed to think of a polyneuritis accompanied by mental symptoms occurring incident to the use of alcohol as exemplifying the syndrome described by Korsakow, although he later included similar clinical symptoms but with a different etiology under the same classification (1), but in the cases herein described only those were included which etiologically considered were due to excessive use of alcohol typifying the wide variation in onset, course and termination. Considering the toxicity of alcohol as the etiological factor in the development of Korsakow's syndrome, we have the most striking example of a chemical toxic agent in the production of definite changes in nervous structures, which changes cannot be entirely dependent upon the primary toxicity of alcohol but which must largely be the result of secondary intoxication produced by the long continuation of the drug.

In the chronic alcoholic there is always established a definite tolerance to the active chemical toxine, probably due to an antitoxine, and the craving for liquor is, not so much the wish to obtain the mental exhilaration which is occasioned by its direct action, as a search for relief from the physical distress which is occasioned by abstinence. That there must be factors other than the direct toxic action is supported by the fact that occasionally this syndrome develops during a period of abstinence.

An investigation of the history covering the preceding years will almost invariably reveal that there has been marked changes of metabolism as shown by gastric disturbances, loss of weight, and general feeling of physical weakness which probably is the result of an auto-intoxication and cannot be without effect upon the nervous tissue.

* Read at a meeting of the Illinois State Hospital's Medical Society, held at the Jacksonville State Hospital, Nov. 14, 1911.

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It is of interest to compare other conditions due to alcohol, namely, acute alcoholic hallucinosis and delirium tremens, and one is forced to conclude that the clinical symptoms composing this syndrome are not due to the toxicity of alcohol *per se* but to secondary changes brought about by its continued use, which destructive changes once they have begun continue out of all proportion to the amount of liquor subsequently consumed. By no other way can we account for the fact that an individual may use alcohol to excess for a period of years without suffering any demonstrable impairment of his usefulness, and then comparatively suddenly there may quite acutely develop an active delirium with neuritic symptoms, yet we find that instead of the nervous structures regaining their integrity and function there may be various clinical findings that point to progressively destructive lesions.

One cannot be unmindful of the similarity of the clinical picture of Korsakow's syndrome and that of an acute intoxication from alcohol. There is the same feeling of well being, the desire to be agreeable, the disturbance of memory in each instance is that of an amnesia, various falsifications and confabulations being quite frequent in both.

Tolerance to alcohol which is attained and which persists in chronic alcoholics for a number of years, slowly changes until the opposite condition is reached, namely, intolerance; and it is frequently found that individuals who have remained practically unaffected by large amounts of various kinds of liquor, become easily intoxicated; when this point is reached it is not a far step to the development of a psychoneuritic condition.

Among the various factors which might be considered as predisposing causes are: general states of malnutrition—perhaps the most important—infections, mental stress, shocks, etc., while the greater frequency of alcoholic excesses among males accounts for its predominance among that sex. However, considering the relatively smaller number of females who use liquor, it is found that women are the most frequent sufferers. A rather interesting observation in this connection is the elective affinity of alcohol for different nerve tissues in the sexes. Females frequently present a more severe grade of neuritis than males, but the accompanying mental changes while they may be extreme are not usually permanent. On the other hand, in males the mental changes are

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more severe, but the neuritis is usually not so marked; just why this should be so is difficult of explanation upon grounds other than the elective affinity of certain chemical toxines for different tissues.

The pathology underlying such a varied symptomatology must affect structures of the entire nervous system.

Cramer (2) found changes in the cell, increase in glia and infiltration of the vessels' walls by cells, very similar to that found in general paralysis. Gredden and Heilbronner (3) summarize their findings as "loss of fibers in various locations of the cerebrum, increase of vessels, thickening of the vessel walls and miliary hæmorrhages in the basal ganglia." Thoma (4) found the most marked degenerative changes occurring in the central convolutions, then in the frontal, and lastly in the occipital, although the degeneration was not equally well marked throughout the same convolution, as in some sections the small pyramidal cells were most markedly affected. The ganglion cells were surrounded by numerous glia cells and vesiculation and chromatolysis of cells were quite marked. Localized increase in vessels, as well as infiltration and thickening, was found. Degeneration of white fibers with increase of glia was quite marked; clearly marked degeneration of the white fibers of the cord, especially the posterior tracts, was also found in one of his cases. Larkin and Jelliffe show that changes take place in the cells of the anterior horns of the cord as well as in the posterior spinal ganglion. In the nerve trunks the changes are usually limited to the peripheral fibers although occasionally an entire nerve trunk may show changes of a parenchymatous nature. The muscles necessarily show degenerative changes proportionate to the destruction of nerve fibers. The general pathology consists largely in those changes common to chronic alcoholism.

The onset of the symptoms is comparatively slow; usually there is a general irritability, with a vague apprehension, accompanied in some cases by subjective symptoms referable to the extremities, consisting of numbness and prickling of the skin, and tenderness of nerve trunks and muscles, until a certain point is reached when an acute delirium occurs accompanied by sensory deceptions. The delirium gradually subsides, leaving the rather characteristic disturbances of impressionability and of memory, with varied

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falsifications to fill in the amnesic gaps. While neuritic symptoms are frequently present early, yet they usually do not reach an extreme degree until after the mental changes have taken place, and may be considered of three fairly distinct types—motor, sensory, and ataxic, although one rarely exists without the others. The motor weakness is usually the most marked, involving chiefly the flexors of the ankles and extensors of the toes, and the extensors of the wrists and fingers, giving rise to the characteristic foot and wrist drop, due to the involvement of the anterior tibial nerve of the leg and the radial branch of the musculospiral in the arm; it is rather interesting to note the fact that these two nerves are the ones most frequently injured by alcohol. However, in some cases all the motor nerve trunks of the extremities are more or less affected and occasionally the motor cranial nerves are involved; muscular atrophy and reaction of degeneration are quite frequent.

The sensory disturbances are usually limited to the stocking and glove areas, and generally consist in a disturbance of the tactile and pain sense, which in some cases amounts to a complete loss. There may be, on the other hand, sensitiveness so marked that even the touch of the bed clothes cannot be tolerated.

The ataxic type is quite rare. Subjective symptoms are practically always present, ranging from a feeling of numbness or prickling of the skin over the extremities to extreme pain along nerve trunks and muscles. It is quite probable that these subjective feelings are not more troublesome because the mental state of the patient precludes the keen appreciation of various sensations.

It is exceedingly rare to find involvement of the nerves controlling the sphincters of the bladder and bowel, and the incontinence is usually atributed to the mental state; however, since it has been shown that definite changes do take place in the cord, we must consider that the incontinence in severe cases may have a definite organic basis.

Cranial nerve involvement is infrequent, and when it does occur it is usually limited to motor nerves though rarely affecting those that are concerned in deglutition and articulation. In one case C. R., there was for a number of weeks very marked articulatory defects, apparently due to difficulty in controlling the muscles of

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the tongue. Optic neuritis is very uncommon, and usually does not progress to complete atrophy.

It may be said that almost all patients suffer from an active delirium, which is dependent on a more or less complete clouding of consciousness. Since there is lack of appreciation of spacial and temporal relations the patient is terrified by the strangeness of his surroundings; added to this there is a misinterpretation of perceptions which increases the mental confusion and is productive of varied conduct. In one of my patients, E. M., the screen on the window of the room through which the electric light was seen, was considered to be an electric sign, the letters of which were constantly changing. Marked illusions of hearing are frequently present, various noises and sounds are construed in rather fanciful ways. The same patient upon hearing other patients going to their meals would frequently call attention to what he believed was a gathering of a crowd who were to witness his prowess as a matador. Very frequently hallucinations occur during the acute delirium, which is to be expected since the lesions must be considered of an irritating nature. In the course of a few days or weeks the acute symptoms give place to a rather interesting disturbance of impressionability, depending upon an amnesia of an anterograde character upon which the rather characteristic confabulations and falsifications are based.

In considering the various faculties of the mind we must consider that memory is fundamental, for other faculties are dependent upon it, although the memory as a distinct faculty cannot be separated from the others, and in a measure is the result of their activities. The ability to recall memories in the normal state depends upon the integrity of the anatomico-physiological connections between one neurone and another as well as between nerve centers. In the alcoholic it is found that the dendrites and collaterals show the first effect of the toxic irritant; and when this occurs there is a lessened capacity of the neurone to receive and discharge nerve energy, and there is also a partial or complete destruction of the collateral fibers connecting different areas, the psychological result of which seems to be a more or less complete loss of associated symbols, or a delay in their recall.

The underlying mental disturbance upon which most of the mental symptoms of this syndrome depends is an amnesia, not

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alone for recent memories but for those of the more or less distant past. Its extent and permanency depend largely on the fact as to whether or not there is in addition to the impairment of the anatomico-physiological connection between cells and centers, also a general destruction of nerve cells.

Amnesia may be considered to be of two types, antero- and retrograde in character; of these the defects of the anterograde type are the most pronounced, and many times so marked that memories for events occurring after the onset of the mental change are poorly recalled, and in some cases entirely lost. Names, numbers, dates of visits of relatives may be retained but a short time only, any slight distraction of attention being sufficient to cause complete forgetfulness. The amnesia of a retrograde type is nearly always present, the order in which memories are lost being directly opposite from the order in which they were gained; in other words, the more recent and less stable memories are the first to be lost. This defect is usually found to extend over a period of a few years prior to the illness, and it must be remembered that in the chronic alcoholic there is a gradual decrease in impressionability, consequently the memories gained over that period of time are more easily lost.

Probably the most interesting mental symptoms are the falsifications of memories and confabulations, which are utilized by the patient to fill in the amnesic gaps. So frequently do they occur that they are considered to be almost essential to this syndrome; in no other condition are they so marked, although frequently present in the psychoses of senility and in paresis.

The falsifications of memories are usually quite bizarre and fanciful, the patient describing, many times in detail, imaginary experiences, with all evidence of sincerity. Frequently impossible tales are related, and usually the patient is so susceptible to suggestion that he can be led into descriptions of the most absurd nature. Falsifications of memory are usually not retrospective in character to the extent that they deal with imaginary events of childhood, but are nearly always of the immediate past and usually deal with the imaginary attainments of the individual.

It is quite well known that the general emotional tone produced by alcohol is one of elation and euphoria dependent upon the inhibition of the restraining influence of judgment; however, in

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these cases we apparently have something in addition, which is the fact that sensory stimuli are not appreciated at their full value and the patient is unmindful of the seriousness of his condition, and since mood is a direct reflection of the consciousness of the general physical tone, we would not expect the affects or feelings to present great variations, but to be those of rather uniform elation, and we find the patient usually interested, enjoying the conversation of those about him and making an effort to be agreeable, which probably accounts for the rather fanciful nature of the falsifications utilized to fill in the amnesic periods.

Impressionability is necessarily diminished when amnesia exists; the patient is unable to correlate perceptions with memories of past experience, which of course prevents new memories from being formed. There is a disorientation as regards temporal and spacial relations, although the patients are able to grasp many points concerning their environment and soon recognize the fact that they are in a hospital and are being cared for by a nurse, yet the time of entrance, nature and location of the hospital usually remain unknown for quite a considerable period of time because of the complexity of the associations required for perfect orientation.

Upon gaining insight, which largely depends upon the improvement in the amnesic state, falsifications and confabulations are no longer present, the emotions become more variable and the feelings of sadness or remorse are quite frequent, in some cases actual depression may persist for a considerable time.

The course of the disease is necessarily quite long, since we are dealing with a destructive lesion. Nearly all cases are brought to the hospital in an extremely serious condition, nutritional disturbances are quite marked, and there is frequently sufficient visceral disease, such as cirrhosis of the liver, chronic gastritis, myocardial and renal lesions to make recovery extremely uncertain.

Nearly all cases that do not die within a few weeks from complicating diseases, show decided improvement, but it is not usual for complete recovery to take place very soon, as there nearly always remains for a time some evidence of the neuritic disturbance, although loss of muscular power with subsequent contractures and deformities is rare.

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The mental improvement is usually quite slow, and when recovery does take place six or nine months is a comparatively short time; in nearly all cases some defect of memory remains. Treatment is unsatisfactory. During the delirious period, hydrotherapy is perhaps of the most importance, continuous baths being quite beneficial in combating the excitement and in the production of sleep; later hydrotherapeutic procedures, with the view to stimulating nutrition, are useful. Of the various drugs strychnine hypodermatically is probably of more value than arsenic. Massage and electricity also have their uses. In short only those measures that are productive of increasing nutrition are of value.

CASE C. R., female, white, age 38, native of England, twice married, four children, one living. Drank beer to excess for about ten years. Family history quite good. Present illness followed shortly after childbirth, from no known cause other than the use of liquor; the trouble began with numbness of the arms and legs and occasional sharp pains. Within six days all four extremities had become so weak that the patient was helpless, but it was not until a week later that the mental symptoms developed. Active movements of the muscles of expression were quite good except for partial ptosis and tremor of the lips. All movements of the arms were feeble, a complete wrist drop was present with but little power of flexion of the fingers; passive movements meet with but little resistance until upper arm was reached, and the extensors and abductor muscles are most involved. Quite marked atrophy of the muscles of the arm has occurred, especially below elbow. The loss of muscular power of the lower limbs is more marked than in the upper, there being complete foot drop and no resistance to passive movements below the knee. All the deep reflexes are absent and muscular sense lost. Muscular atrophies and reaction of degeneration are present. There has been from the first loss of control of the bladder and bowel, which is a source of great distress to the patient. The limbs are cold and cyanotic, and there is a well-marked stocking and glove area of anæsthesia and analgesia; articulatory defects are marked, a great deal of difficulty experienced in all movements of the tongue. Pupils are dilated, the direct and consensual reflex is quite sluggish; moderate optic neuritis, discs contracted, the cribriform layer is prominent and the background is dirty in appearance. During the first ten days following the onset of the mental trouble there was quite an active delirium, illusions of sight being quite prominent; this condition gradually changed until there was the rather characteristic amnesic disorientation, the patient manifesting an interest in those about her, always bright, alert, cheerful, and making an effort to be agreeable, yet she was unable to recall but few things of her past life; her age, street number, names of her children, etc., could not be recalled; however, she never was at a loss to supply the lost memories with very fantastic fab-

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rications. After about four months there was a marked improvement of muscular power, especially in the upper extremities, the patient being able to lift herself from a chair to the bed; the deep reflexes were present but very much decreased. Tactile and pain sense had reappeared in the upper extremities, but were quite deficient in the lower; there were no articulatory defects, and the control of the bladder and bowel was normal. Improvement mentally was quite marked; clear insight had been gained; impressionability was quite good. A year after the symptoms appeared there were well marked contractures and deformities, the feet were in the position of talipes equinus varus, the wrists were flexed, but some power of extension was present, the patient having been very faithful in her effort to cooperate in treatment, and would spend hours in passive movements of fingers and wrists; there was no mental defect remaining.

Case R. C., family history negative as regards use of liquor. Patient is 43 years of age. German. Personal history: the mother of ten children, six of whom are living and well, the only previous illness was an attack of rheumatism eleven years ago, followed by complete recovery. About ten years ago the use of beer and whiskey was begun, the habit grew until during the last two years an excessive amount was used and intoxication was quite frequent. It was noticed by the husband that during the past year her health had been failing; until two weeks before admission to the hospital she had been able to care for her housework, when her limbs became so weak walking was impossible and she lost the use of her hands; at this time there was moderate clouding of consciousness with many falsifications of memory. Upon admission to the hospital the neuritic symptoms were well marked, there was impairment of the flexors and extensors of the wrist, the muscular power equal on the two sides and 15 kilograms; in making an effort to grip an object the little fingers were not flexed. The lower limbs were always flexed at the knee joint because of the intense pain when they were extended, and all movements were limited. There was complete loss of flexion of the ankle and all movements were accompanied by pain. The knee jerks, tendo achilles and supinator reflexes were lost, and there was a partial anæsthesia of the stocking and glove area of the arms and legs which was not in proportion to the loss of muscular power. Pain sense was involved to a greater extent than the tactile, and over the stocking and glove area the prick of a pin was seldom recognized. All coordinated movements were very uncertain, atrophy is not present, and there was loss of control of the sphincters. There was an involvement of the seventh cranial nerve of the left side; slight difference in the size of the pupils with a sluggish reaction to light and shade. The mental picture is that of an anterograde amnesia with various falsifications which are not fanciful in nature; on being asked her name she invariably returns some name other than her own but when several names were suggested to her she selected her own; is unable to recall her age, date of marriage, and names of her children, etc. There has never been an active delirium nor sensory deceptions; she makes an effort to be agreeable to every one, and recognizes the fact that she is in a hospital, but has

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no insight into the gravity of her condition. After about eight months the neuritis had greatly improved, she was able to walk, subjective symptoms had disappeared, and there was complete recovery of her mental health.

CASE E. M., male, age 25, native of Switzerland, college graduate. Speaks four languages quite fluently. Has always been of a roving disposition acquiring a liking for alcohol quite early in life, but never drank to excess until about six months before his trouble began. Although his favorite drinks were whiskey and brandies, he never became intoxicated and had not used liquor for at least several weeks before the onset. According to his own statement he has never held a position very long at a time and has worked at various things, usually a steward of a hotel. His physical health has been exceptionally good; admits having had gonorrhœa but denies syphilitic infection. Family history is quite good with the exception of the fact that his father used liquor to excess. Admitted to the insane hospital after having been picked up on the street by the police in such a confused state that he was unable to give them any information concerning himself.

The patient is a strong, robust man, and the only thing worthy of consideration in a physical way is the rather marked general arterio-sclerosis for a man of his years. Neurological findings at this time were negative except for a slight increase of the deep reflexes of the upper extremities and decrease of the lower. Within a week it was noticed that there was a certain clumsiness of movements of both hands, being more marked in the right, and within a few days there was complete wrist drop of the right hand and partial of the left, which always retained sufficient power to button clothing, etc.; the muscles of the thumbs were unimpaired, and while the extensor muscles were more markedly involved, there was some impairment of the flexors; coordinated movements of the arms and hands were exceptionally well performed considering the paralysis. Partial anæsthesia of the arms and hands beginning about half the distance between the wrist and elbow were present, the right being more involved than the left, stereognostic sense remaining normal. Pain sense was not lost, neither was there any involvement of the lower extremities or cranial nerve group; within a few weeks the paralysis began to improve, the patient never having complained of anything save a numbness of the hands. The mental symptoms were exceedingly well marked and were sudden in onset, the patient having been working steadily, none of his friends even his room-mate noticing anything wrong and their first knowledge of his mental condition was gained after he had been picked up on the street in a delirious condition unable to state where he lived. During the first four days or his residence at the institution he was wildly delirious, wristlet restraint being necessary; numerous disturbances of perceptions were present, illusions of sight being the most marked; he imagined he saw illuminated letters on the screen of his room through which the light was shining, and would pronounce the different letters, stating that they were on an electric sign; he believed he saw his rela-

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tives and friends, heard bells ringing, etc., heard the shouting and applause accompanying a bull fight and stated that he was the matador and the people were gathering to see him kill the bulls. (Patient had spent a year in Mexico.) This active delirium subsided, leaving his consciousness still clouded, at which time he expressed many fantastic ideas, such as "being a soldier fighting for his native country," that "he was a steam engine," etc. After about a week consciousness became much clearer; he recognized his physician and nurses and knew that he was in a hospital. There was a complete anterograde amnesia covering the period of his illness, and also nearly all memories of the preceding year were lost; about the only thing recalled was the name of the firm where he last worked, but he was unable to remember the location; these amnesic periods were filled in by exceedingly fanciful falsifications. The loss of power in his hands attracted his attention and he would frequently hold them up and give interesting accounts of how, as he expressed it, they were "broken." After about three weeks he gained insight into his condition, but impressionability and memory for recent events were extremely poor and he no longer expressed falsification of memory; he became quite depressed, crying and bemoaning his illness, making threats of suicide, and finally attempting to destroy himself by hanging. Following this there was general improvement, only to relapse into a delirious confused state three different times before final recovery, about four months after the development of the symptoms.

Case J. P., family history negative as far as the use of liquor is concerned. Age 45, Irish, married, several children. Occupation a gravel roofer; had been accustomed to drink beer to excess for years, rarely becoming intoxicated. Admission to the hospital was due to the fact that he became physically unable to work, and developed an exceedingly irritable attitude toward his wife, who noticed that for some months his memory had been failing. The patient had noticed that for several weeks he had difficulty in climbing a ladder, and that there was rather constant pain in the calf muscles. His physical health had not suffered, he had always been an exceptionally strong robust individual. When he was admitted to the hospital there was marked loss of power in flexing the ankle, resulting in a steppage gait; there also was loss of power of the extensors of the wrist with a slight impairment of the flexor muscles. There were no atrophies present, the deep reflexes of the lower extremities were minus three with reinforcement, all others normal. Romberg marked. Stereognosis normal. Marked clumsiness for coordinated movements. Tactile and pain sense were normal; however, four months had elapsed since development of the motor symptoms; subjective symptoms, a feeling of soreness over the muscles of the legs. The mental symptoms were those of a progressive loss of memory: he could not recall memories relating to his own family, and it was impossible to retain new impressions. His general manner was decidedly out of keeping with his memory defects: he was bright, alert, agreeable, although partially conscious of his defects of memory. There were rather marked delusions regarding his wife

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which were not systematized nor fixed and which gradually faded as deterioration progressed. One year after the onset of symptoms the neuritis remained unchanged, but there has been progressive failure of memory.

CASE J. V. D., family history is negative. Patient is 48 years of age, married, father of seven healthy children. Always industrious and accumulated about twenty thousand dollars. Began the use of liquor at the age of 19 years, required more and more each year until he took the Keeley cure 12 years ago; since that time has not resumed his former position as clerk for a lumber firm, but did not drink until six years ago: since that time he used both whiskey and beer freely, although never becoming intoxicated. About a year before the onset of his mental trouble the patient noticed that his health was failing, and as a result consumed more liquor than before; at this time there developed exceedingly severe pains in all extremities, being more marked along the trunk of the sciatic nerve, and within a comparatively short time there was a numbness of the skin over the forearms and hands, being more marked in the right, which was accompanied by a peculiar clumsiness which prevented him performing coordinated movements such as dressing himself, etc. Quite suddenly there developed an active delirium, consciousness being completely clouded, hallucinations of hearing being quite prominent; there were also illusions of sight: he frequently believed that he saw his wife in compromising relations with other men, for this reason he made several attempts to kill her, and constant restraint was necessary. Very frequently he accused his wife of infidelity and was very bitter toward her. This period of delirium lasted six weeks, during which time nutritional disturbances were quite marked. Gradually consciousness became clear, but he was unable to recall any events that had taken place, not even remembering his attacks upon his wife, and apparently not having delusions regarding her. After a period of two months impressionability became quite accurate, and there were no mental defects as regards memory except during the time of the acute delirium and the few weeks following. There was never at any time falsifications or confabulations to fill in the amnesic period; the neuritic symptoms improved and the only residual remaining was rather vague indefinite pains in the legs, and quite marked tremor of the hands and lips.

CASE C. L., family history is negative as regards the use of alcohol. Male, age 37, German, teamster by occupation. Accustomed to use both beer and whiskey for years, but rarely becomes intoxicated. Mental symptoms appeared as an active delirium, which persisting for several weeks was succeeded by a very marked amnesia, very few memories even of his childhood being retained. He has no conception of time, does not remember that he has been married, but recognizes his wife when she visits him, forgetting in a very few hours that he has had company. His age, number of his home, firms who employed him, are not recalled. Impressionability is extremely limited, even simple numbers and names not being retained more than a few minutes. There is not the slightest

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conception as to environment: he states that he is in a school house "because the buildings are large and are painted red." His manner is interesting, considering the amnesia, since he takes an active interest in the ward work; always reads the papers but is unable to recall what he has read; is quite agreeable and always pleasant. There has been but few falsifications of memory although he is not conscious of his mental condition, which after two years is practically unchanged; there has been but slight involvement of the peripheral nerves limited to a numbness and tingling of the skin of the extremities which persisted only a few weeks.

The short synopsis of the preceding histories bring out the rather variable onset, course and termination of this syndrome. In case C. R. the neuritic symptoms were exceedingly well marked. Optic neuritis, clumsiness of movements of the tongue resulting in difficult deglutition and articulatory defects, and disturbance of the organic reflexes are rather infrequent, and combined with the fact that they were recovered from, while the involvement of the limbs did not show improvement after a certain point was reached, make them of interest. This case presented the most extreme mental picture, but complete recovery occurred in about a year. Comparing this case with R. C., a wide difference is shown as far as subjective symptoms are concerned, and although the neuritis was not so marked in this case the pain along the nerve trunks, especially the sciatic, was intense and persisted for months, but followed by complete recovery; also in this case there was involvement of the facial nerve.

It is quite unusual for the syndrome to develop during a period of abstinence as it did in the case of E. M. who had not used liquor according to an intimate friend for at least several weeks, and who had noticed nothing unusual in his manner and conduct even in the morning of the day upon which he was picked up by the police in a delirious condition. Equally interesting in this case is the fact that there were several recurrences of the delirium, and that as soon as insight was gained into the seriousness of his condition, he attempted suicide; complete recovery occurred in about four months.

The prolonged onset is well illustrated in the case of J. P. who had noticed for several weeks that he had difficulty in walking and climbing a ladder, and whose wife had noticed an increasing irritability and failing memory over a period of several months

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before his admission to a hospital, a year after which time the neuritic symptoms had remained unchanged, and there was a gradual progressive mental deterioration.

In the case of J. V. D., an exceedingly interesting feature of the delirious period, which was six weeks in duration, was the development of the typical delusions of infidelity of the chronic alcoholic; during this time there were very vivid illusions of sight, in which he imagined he saw his wife in compromising relations with other men. Because of these delusions and illusions he attempted to kill his wife, and had to placed in secure restraint for her safety. After recovery of his mental health he had no recollection of the various illusions or delusions which had been so prominent and could not conceive how it was possible to have made such accusations against his wife.

Case C. L. is quite illustrative of an extreme degree of amnesia even for events of childhood. There was a decided impairment of perceptive activity, for which reason it was impossible for him to gain knowledge of his environment, names, dates, and numbers being retained only a few seconds. His general manner was decidedly out of keeping with the degree of amnesia and impressionability defects, since he was very much interested in other patients, made friends readily, was neat and tidy in appearance, and one would never suspect until the patient was engaged in conversation that mental defects existed.

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THE LABORATORY DIFFERENTIATION BETWEEN GENERAL PARESIS AND CEREBRO-SPINAL SYPHILIS AND THE SEROLOGY OF SPINAL CORD TUMORS.

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Just as there are many forms of spirochætes and only one that is capable of producing the lesions of syphilis, there are also many appearances in the end reactions of the Wassermann test. The insufficiently trained eye is often unable to differentiate between the refringens and the pallida; the same is true of the Wassermann reaction, where one with a moderate experience is unable to distinguish between an inhibition that is total and one that is almost so. It is this ability to interpret and read end results correctly that marks the matured and seasoned worker. As there are different degrees of intensity of inhibition, all meaning syphilis, there is, however, one feature which as far as it is known to me has not as yet been described. This particular feature can be obtained with intensely inhibiting sera, as has been my experience. The sera from general paralysis inhibit very strongly, and the end reactions obtained with this disease are quite different from the positive end results obtained with other syphilitic conditions.

Although they all show upon standing the heap of cells (Kuppe) at the bottom of the test tube, it is not so much the end result of the positive reaction as the early appearance of the inhibition that is of value in judging the result. Plaut speaks of the Wassermann reaction in general paralysis as being the same as in manifest syphilis, this opinion being based upon the intense inhibition obtained by the Munich worker in these two different cases of lues. It has been my custom to designate certain positive end results with the Wassermann test as being as strong as untreated florid lues or general paresis. Of course these opinions were exchanged between laboratory intimates only, and were not

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included in the rendered laboratory report. However, when the question of general paresis came up, and it was asked of the laboratory to offer a suggestion, this intense, early inhibition together with other data were often the chief differentiating points permitting of the acceptance of general paralysis, and excluding cerebro-spinal lues. As you all know the last stage of the Wassermann routine is the phase of hæmolysis. As the tests and their controls are placed in the incubator, it will be noted that the red color due to the sheep cells changes from the familiar opaque blood red to that of an opaque old rose color. This is due to the sinking of the sheep cells to the bottom of the test tube, leaving only a small number of cells intermixed with the other biologic reagents. As hæmolysis appears in the test tube with the auto-inhibition controls this opacity loses its intensity and gradually becomes entirely transparent, so that ordinary newspaper print can be seen through it. All negative controls being hæmolyzed it is the custom to take a preliminary reading. At this time it will be observed that all positive sera have a small heap (Kuppe) of cells at the bottom of the tube. In case the serum comes from a patient with full fledged general paralysis there will be noted besides this heap of cells at the bottom a clear colorless zone 4 to 6 mm. in thickness, and projecting into this from below upwards, in a waterspout fashion, the previously mentioned opaque rose colored fluid. This zone is at the top of the fluid in the test tube. This appearance may also be found in some manifest luetics, being one of the earliest signs of a reaction that will surely prove to be positive. In general paralysis this clear zone may be observed as early as 15 minutes after the hæmolytic incubation. If left at 37° for 24 hours, these sera do not hæmolyze in the least degree.

In my work a few tabetics who gave this degree of intensity in the serum Wassermann also gave a marked excess of globulin in their spinal fluid, and later developed unquestionable clinical signs of general paresis. The halo spoken of before begins to form at the sides of the test tube about a cm. from the top, starting as a faint transparency in the opaque rose colored fluid. It shows a gradually increasing lateral concavity, and appears as if something was constricting the opaque fluid at that level. This phenomenon may at times also be observed with other strongly positive sera,

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but the time of its appearance in them is much later than in general paralysis. Another peculiarity of general paresis is its stubbornness in retaining the positive Wassermann reaction after treatment, which is a feature worth remembering, when such a result is obtained in a thoroughly treated individual who presents inconclusive evidence suggestive of general paralysis. As useful as the Wassermann reaction may seem upon a cursory investigation, it does not differ from other laboratory tests, in that it is not infallible. There are cases of general paralysis where no inhibition is obtained with the serum and others where the spinal fluid is negative; on rare occasions the serum and fluid may prove to be negative. In my experience a few cases of general paresis were as negative as normal sera and fluids. These discouraging facts may not minimize the value of the test, which being a laboratory report should only be collated with the findings at the bedside. The clinician upon a closer investigation may either accept or reject the laboratory verdict. In case of a negative Wassermann report its value for diagnosis is only about 25 per cent of the entire ensemble of facts necessary for establishing lues; the clinician has the history, very often finds symptoms more or less classic, and frequently the result of therapy aids him in establishing lues. These three corroborative data outweigh the laboratory findings three to one.

I do not agree with Plaut who in his book on the Wassermann reaction in psychiatry states that a negative Wassermann reaction, where general paresis is thought of, may be considered as significant of the absence of this disease. Such an opinion cannot be entertained at present, as many workers of experience have found enough contradictory instances where the reaction was found negative either in the serum or in the spinal fluid. The case is quite different where the return from the laboratory is positive. Taking for granted that this test was performed with the precision that it requires, and the end reaction passed upon by a matured worker, a positive report upon a serum in a neurological affection carries 100 per cent of certainty as far as a luetic infection in a given case is concerned. It does not make the neurological disease syphilitic, but where general paresis is thought of such a result carries conclusive evidence. The intensity of the end reaction in cerebro-spinal syphilis is frequently as marked as in

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general paralysis, but as emphasized before it is not the degree of intensity of the inhibition as the time of its appearance that is suggestive. The above described peculiar halo at the top of the fluid is rarely observed. It is also to be noted that the serum of patients suffering from cerebro-spinal lues who received some treatment shows a gradually diminishing intensity in the end result with the Wassermann test. Sometimes the result following treatment may show a completely negative outcome. This phenomenon is easiest obtained with sera that from the beginning lacked in inhibitive intensity. As we speak here of instances that clinically more or less resemble general paresis as well as in the Wassermann outcome, these sera would naturally not offer any difficulties from the serological standpoint. It is the total inhibition that at times though rarely appears in cerebro-spinal lues that gives us concern. Fortunately, these coincidences are rare, and besides, there are tests other than the Wassermann reaction that help us in deciding for or against general paresis. The absence of a positive Wassermann in the spinal fluid as found by Plaut in cerebro-spinal syphilis I cannot endorse as a differentiating point.

Estimation of a Globulin Excess.

An excess of globulin in the spinal fluid from general paretics is more constant than the positive Wassermann test. In fact, in the corroboration of syphilitic affections of the nervous system the laboratory findings in the cerebro-spinal fluid are much more conclusive and to the point than the serum analysis. An unquestionably positive Wassermann reaction in the cerebro-spinal fluid without exception signifies a luetic nervous disease, the same obtained on the serum alone means syphilis but does not implicate the nervous apparatus, even if the patient suffers from a disease of a nervous nature.

The globulin excess in the spinal fluid is usually present where a positive Wassermann is obtained in the serum or fluid of a general paretic, and in the majority of instances points to the correct interpretation of the serological report. The degree of this globulin excess in general paresis finds a parallel in its intensity only in acute active meningitides. In order to obtain a quantitative insight regarding the degree of excess, the following technique was employed: Five test tubes one cm. in diameter each

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receive .5, .4, .3, .2, and .1 cc. of spinal fluid to be analyzed. The tubes containing less than .5 cc. of spinal fluid are brought up to that quantity by the addition of distilled water. Each tube is gently boiled, and two gtt. of a 5 per cent butyric acid in normal salt solution are added and the fluid is boiled once more. Immediately after the second boiling each tube receives (underfloated) .5 cc. of a supersaturated ammonium sulphate solution. The tubes are set aside and the reading taken 20 minutes later. At the end of this time an excess manifests itself in the form of a thick granular cheesy ring. The greater the excess of globulin the smaller the quantity of spinal fluid necessary for its production, so that the tubes containing .4 or less of fluid also shows this ring. Where the increase is very great, the tube with .3 or with .2 may show this ring. The majority of general paresis fluids show the excess down to the .3 cc. tube and on rare occasions in the still smaller tubes; in this particular it resembles the excess found in acute meningitides. Needless to say that here and there fluids are obtained from paretics that do not show this excess; this, however, is the fate of all laboratory tests and methods.

The analyses on fluids from syphilis of the brain and cord on rare occasions only gave an excess with the .4 cc. tube, and only once out of 62 fluids in the .3 cc. tube; in the latter a very pronounced polynucleosis was also obtained, the reduction of the Fehling's solution was absent, adding an additional factor that makes up the serology of an active exudative inflammation of the meninges. In cerebro-spinal syphilis about 40 per cent of cases found by me show an excess with this method in the .5 cc. tube, the smaller tubes showing no excess at all, or a faint indication of a ring in the .4 cc. tube. The rest, 60 per cent, may show no excess at all, or only a slight hazy ring with the .5 cc. tube. The globulin excess in the spinal fluid from general paretics received on more occasions than one mention from competent workers, claiming for this intensity a diagnostic significance, meaning general paresis. It is certainly found more often in the fluids from these patients with the described degree of increase than in any other paraluetic nervous affection. Its persistence after treatment is another general paresis feature, as in cerebro-spinal syphilis it tends to disappear very promptly.

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The Cell Count.

In the cell count of the spinal fluid is to be found the chief differential distinction between general paresis and cerebro-spinal lues. The Fuchs-Rosenthal method was used.

Before giving the verdict as to the possible significance of the cell count obtained, it is of greatest importance to have all data pertaining to the recent or remote treatment the patient may have received. After a specific medication the cell count is altered so that it no longer can be utilized for purposes of serological differentiation. The cell count in general paresis is very little if at all influenced by treatment, be it salvarsan or anything else. In cerebro-spinal lues there is a tendency for the cell count to return if treatment of a specific nature was not resorted to for a long time.

The material that came to my notice, the regularity with which high cell counts were obtained with fluids from untreated patients with cerebro-spinal syphilis attracted my attention. As many as 1400 cells were counted in well obtained specimens.

In general paresis I cannot recall a case where more than 80 cells per cubic millimeter were seen. Granting that more than 80 cells per cm. could at times be found, although not encountered by me, I still believe that cerebro-spinal syphilis could readily be distinguished from general paralysis by the high cell count in the former, which in the great majority of instances was over 100 in untreated cases. On the other hand low cell counts are the rule in general paresis, so that reports showing a complete inhibition of hæmolysis, with a globulin excess in the .4 or in the .5 cc. tube, will as a rule not have more than 15 to 30 lymphocytes per cmm.

In fact, it has been my experience that with the higher cell counts in general paresis, such as 70 or 80, the globulin increase is not so marked as in the fluids with the lower counts. Doctor Charles L. Dana is inclined to consider the high cell count in general paresis as flowing directly from a soil prepared for it by a pre-existing cerebro-spinal lues. The less intense globulin increase seems to corroborate this seeming serological relationship between these two paraluetic affections of the nervous system. In the case of treated cerebro-spinal lues the high cell count comes

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down and resembles the count usually obtained in general paresis. This fact need not confuse the serologist, as the therapy that will lower the cell count from 100 cells or more to less than 80 will also do away with most of the other constituents of a positive serological report, such as the globulin excess in the fluid or the positive Wassermann in one or both. Had the treatment been given to a patient with general paralysis, the cell count would also be low, but the globulin excess would still remain and a positive Wassermann persist either in the fluid or in the serum, or in both media. Where the clinical data are not convincing, my experience has shown that the laboratory findings in such instances are decidedly of value and frequently the true state of affairs was pointed out by the serology; the high cell count speaking for lues cerebro-spinalis plus the other necessary features, the low cell count and other positive features being significant of general paresis.

Had the patient received treatment and the fluid shows a strong globulin excess, together with a low cell count and a positive Wassermann in the fluid serum, a general paresis can be accepted as the underlying cause for these findings. These facts tend to prove the comparative futility of general paresis therapy as compared with the results obtained with treated cerebro-spinal syphilis.

These differences can be best seen in table comparisons:

Untreated cases of—

General Paresis.	*Cerebro-Spinal Syphilis.*
Serum Wass., plus (rarely neg.).	Plus or negative.
Cerebro-spinal fluid Wass., plus (rarely neg.).	More often negative.
Globulin from .2 to .5.	.5 or negative.
Cell count from 8 to 80.	Over 80 to 1700.
Fehling's reduction always present.	Sometimes absent.

Treated cases of—

General Paresis.	*Cerebro-Spinal Syphilis.*
Serum Wass., plus or weakly plus.	Usually negative.
Spinal fluid, plus or weakly plus.	Rarely positive.
Globulin still in excess.	As a rule absent.
Cell count nearly as before.	Much less than before.
Fehling's reduction present.	When absent before, reappears.

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These comparative tables show that even in paresis the positive Wassermann reaction may at times be wanting in either the serum or fluid or in both. As such negative general paresis cases were observed by me, I find it necessary to mention this fact here. The causes for such findings must be ascribed in part to the method and technique employed by me as well as the extreme caution in rendering positive Wassermann reports and in part to the actual negative conditions that at times are really present in general paresis. I possess records of sera and fluids where the report was negative upon four separate analyses. It is not out of place to recall the work of Hauptmann in this connection where the "Auswertung's Methode" in the spinal fluid was resorted to. The Hamburg worker emphasizes the practicability of this method of using gradually increasing doses of spinal fluid, and reports a rich material of cerebro-spinal syphilis cases all of which gave a positive reaction in the spinal fluid. Upon a critical analysis of this material, it is apparent that the greatest care was observed in not reporting a case negative, that from the clinical side may have had a chance to be classed as syphilis of the brain and cord. The question that arises in the mind of the serological investigator is, "Did Hauptmann have the usually good fortune to work with material that was never treated?" This can hardly be the case in as progressive a medical center as Hamburg, and it is therefore my duty to point out at this juncture the fallacy of anyone who attempts to fit the laboratory report to the clinical picture of a given case. In experimental serology of the above nature, the only control for the obtaining of correct data is to keep the serologist in ignorance of the clinical facts. Those who are accustomed to work with this very complex reaction know how easily mistakes can be made and reported.

Before closing the subject of therapeutic response in general paresis I wish to mention a case where three intravenous injections of salvarsan caused the serology to become entirely negative. The clinical manifestations also improved to some extent, continuing so for about three weeks. At the end of this time, without any premonitory manifestations the patient suddenly died.

The following lines will tend to show to what extent the serology coincides with the clinical facts. A few case histories will serve as examples. This material is chiefly from Ward's Island, N. Y.

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TRAUMATIC PSYCHOSIS CLINICALLY SIMULATING A GENERAL PARESIS.

S. H., age 32, broker, separated from wife. Admitted October 31, 1910. Patient was perfectly well until the early part of October, 1910, when following an accident he became dizzy, had a convulsion and soon passed into a delirious state, for which he showed an isolated amnesia. When admitted to the hospital he was rather elated, denied delusions and hallucinations, was rather talkative, but coherent, and his answers were always to the point. His orientation was good and his memory showed no defect. He was rather expansive, but there was considerable basis for his ideas and it was difficult to demonstrate absurdity or fiction.

During his residence in this hospital the patient was quiet and well behaved, but still maintained his former expansive ideas, which were probably exaggerated but not totally absurd. He was at all times amnesic for the acute period of his illness.

At one time it was thought that the patient suffered from general paresis, because of the history of syphilis, coarse tremor of the tongue, and on a previous occasion the limited range of his pupillary reaction; before his discharge the physical status revealed no neurological symptoms, and, moreover, the lumbar puncture was negative.

Serology.—The Wassermann reaction was negative in the serum and in the fluid. Globulin normal, one cell per cmm., Fehling's reduction normal.

ARTERIO-SCLEROSIS CEREBRAL TYPE, SIMULATING GENERAL PARESIS.

H. P., age 44, married, U. S., colored. Admitted March 22, 1911. First admission to this hospital was in June, 1909. About January, 1908, patient became dizzy, talked at random, his speech being thick. The physician who attended him at that time said he had a stroke of paralysis. The patient slightly improved, but on June 4, 1908, he became unconscious, followed by a state of excitement, and he was admitted to this hospital. On admission his gait was unsteady, knee jerks were exaggerated, tongue and facial muscles tremulous; he was elated, some of his answers were irrelevant, orientation was defective, and memory and retention were poor. However, no delusions or hallucinations were determined. At that time the case was regarded as one of general paresis. After some residence at this hospital he was permitted to go home, and March 22, 1911, was readmitted.

Physical examination showed equal pupils, not reacting to light, coarse tremor of the facial muscles and fingers; equally exaggerated knee jerks, scar on penis and arterio-sclerosis. Mentally, he spoke in a rambling manner, his replies were irrelevant, was rather euphoric, and his orientation was poor; in giving the history of his life many discrepancies were noted. During his stay in this hospital he grew more and more mentally dilapidated and physically worse, and died on June 8, 1911.

During his life the diagnosis of general paresis was accepted. The post-mortem examination showed no evidences of general paresis neither

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macro nor microscopically, but instead an advanced arterio-sclerosis was demonstrated.

Serology.—Wassermann reaction negative in the serum and in the spinal fluid. Normal cell count, globulin content, and Fehling's reduction.

A Case of General Paresis with Negative Serological Findings.

W. V., 44, German, alcoholic, widower, syphilis at 25. Admitted to Wards Island May 29, 1910. For about two years before admission to the hospital was more or less irritable, destructive, and would use profane language. Grew gradually worse. Before admission patient bought a revolver, got into an argument with a man, discharged the weapon, which fortunately was not loaded, being thereupon arrested. The informant also noticed that of late the patient's speech was thick and sticking. At the hospital he was rather elated and euphoric, was oriented, his memory was good and he would ramble from topic to topic; his writing was defective. During his stay in this hospital he showed marked psycho-motor unrest and at one time was put in the continuous bath. On one occasion he said that he was the strongest man in the world and that he would make millions of dollars. Physically he showed pupils that reacted sluggishly; knee and achilles jerks absent; tremors of fingers and ataxic speech. Later the speech got very defective and his pupils ceased to react to light completely. Gradually he declined physically and mentally, continuing to be elated; showed very poor judgment, and on May 9, 1911, died of a lobar pneumonia and bed sores. No post-mortem permitted.

Serology.—Wassermann negative in the serum and spinal fluid. Globulin normal, 7 lymphocytes per cmm., Fehling's normal.

Two other patients with a negative serology died within one month of the performance of the test. A few more cases with negative findings were obtained on patients with general paresis who were in the terminal stages of the disease. It is possible that the negative serology is to be regarded as a danger signal where general paresis is concerned.

General Paresis, Clinically and Serologically.

W. H., 51, Ireland, clerk. Admitted May 30, 1911. No history obtainable. Upon admission to Wards Island, physical examination showed unequal, irregular pupils; left reacted to accommodation but not to light, the light reflex was only slightly present in the right; left eye was blind; optic atrophy was marked in the left; exaggerated knee jerks, and some tenderness over the nerve trunks of the lower extremities; tremor of hands and at times of face; speech was slightly slurring, and writing was poor, but not tremulous. Mentally, patient was rather irritable; talked in a rambling manner; indulged in circumstantiality, fabricated freely, and was boastful in his demeanor. His memory, orientation and retention were poor. Patient had a convulsion and soon following this he died.

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Diagnosis.—General paralysis, cerebral form, with alcoholic symptoms Korsakoff type. The post-mortem showed the typical picture of general paresis.

Serology.—The Wassermann reaction was positive in the serum and fluid. Globulin marked excess, 25 lymphocytes per cmm., Fehling's normal.

The following are examples of cerebro-spinal lues. The serological findings only will be argued and interpreted.

H. C. C., 38, single, American, newspaper work, mild potator, lues at 15. Two years ago diplopia; paralysis of right external rectus, had to wear glasses; loss of confidence in venere; worries about syphilis; heavy feeling across chest; shows marked tremor of fingers; lively knee and ankle jerks; abdominal and epigastric reflexes exaggerated; slight irregularity of pupils, do not react to light, react to accommodation.

Serology.—March 3, 1911, serum Wass. positive, cerebro-spinal fluid Wass. positive, globulin excess, cells 379 lymphocytes; 4 poly's; Fehling's normal. March 28, 1911, intravenous of salvarsan.

Serology.—April 28, 1911, serum Wass. negative, cerebro-spinal fluid Wass. positive, globulin negative, cells 250 lymphocytes, Fehling's reduction normal.

The serology in the above instance tends to show how therapy influences the neuro-serological report. It is not at all impossible to obtain post therapeutic serological findings that do not differ from absolutely normal findings of healthy individuals, this in patients where no doubt exists as to the syphilitic nature of the neurological disease. This is also the *ultimum bonum* looked for by the therapeutist, a condition frequently obtained by proper treatment.

Such results, however, often puzzle the laboratory worker who loses sight of the negativating influence of antiluetic therapy.

The table submitted below shows to what extent treatment can make the typical cerebro-spinal lues change its serology.

Date.	Cells.	Glob.	S. Wass.	Fl. Wass.	Fehling.	Remarks.
Jan. 18, '11	357	Plus..	Plus.....	Neg.....	Normal...	1, 20. 606 intravenous.
Jan. 27, '11	309	Plus..	Plus.....	Neg.....	Normal...	
Feb. 14, '11	188	Neg..	Plus.....	Neg.....	Normal...	2, 16. 606 intravenous, .6
Mar. 21, '11	95	Neg..	W. Plus..	Neg.....	Normal...	3, 24. 606 intravenous, .6
Jan. 19, '12	21	Neg..	Neg.....	Neg.....	Normal...	

Between March 24, 1911, and January 19, 1912, patient received at irregular intervals mercury rubbings.

An opinion based upon the serological report of 1, 19, 1912, could never have resulted in the verdict of cerebro-spinal syphilis.

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A serologist not acquained with the previous findings could not have arrived at the proper classification of the disease at hand. It is needless to point out the fact that some sera and fluids from general paretics and patients with cerebro-spinal lues do not conform to the types formulated in these pages; these must be regarded as exceptions and should be utilized only with care together with the clinical findings in a given case. When this method is pursued, i. e., the laboratory findings collated with the clinical data, the chances for erring in the diagnosis are very much minimized. Below is recorded a case where no history could be obtained, nevertheless there was no doubt as to diagnosis of old terminal cerebro-spinal syphilis.

The above serology is not typical of cerebro-spinal syphilis, nor is it to be considered as typical of general paralysis. On account of the negative Wassermann reaction in the cerebro-spinal fluid it becomes safer to consider the malady as cerebro-spinal lues. The clinical facts, however, were sufficient without any serological help to interpret the condition of the patient, and the post-mortem fully corroborated the *intra vitam* diagnosis of cerebro-spinal syphilis.

Mr. P., 50, single, excessive in Baccho. History of syphilis or the development of the disorder undetermined. Patient was sent to Wards Island from Bellevue Hospital. Physically he showed irregular pupils, which reacted to light; over active knee jerks; tenderness over nerve trunks; no ankle clonus, no Babinski; mild arterio-sclerosis; in urine albumen and epithelial casts. Mentally he was rather dull and inactive; rather confused, and muttered unintelligibly. He had difficulty in comprehending questions; he could not carry out simple commands and there was some evidence of paraphasia. Soon after the admission to the hospital the patient died. Post-mortem showed cerebro-spinal meningitis; solitary gumma beneath the left prefrontal convolution, and no evidence of a paretic process.

Serology.—Serum Wass. plus, cerebro-spinal fluid Wass. negative, globulin excess, cells 52.

I will conclude this article by giving my results with the serology of abnormal intradural conditions of the cord. I purposely do not make use of the term tumor, as it does not entirely fit the post operative findings. It was found on several occasions that it is not necessary for a gross tumefaction to be present in order to produce the findings characteristic of surgical intradural conditions. In all, 21 serological analyses were made and compared

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with the surgeon's findings in the cord and intradural space. A few of these findings are scheduled below.

Mrs. H.	Ser. Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.1	6	Normal	Yellow

The exposed cord showed no marked deviation from the normal. A small incision into the cord revealed the presence of a dark mass, that upon analysis proved to be a clot from an old blood extravasation.

Mrs. P.	Ser. Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.1	14	Normal	Yellow

This patient's spinal cord was enveloped to the extent of nine inches in a dark tumor mass. Upon analysis by Dr. Zabriskie the neoplasm proved to be an endothelioma with here and there hæmorrhages varying in size. There were also a few areas showing cystic changes, and it is not at all improbable that in this case the needle may have punctured one of these cysts and delivered the very yellow spinal fluid. It is permissible to regard all yellow spinal fluids as originating in a manner pictured by the above two cases, be it adjacent to or remote from the point of puncture.

Mr. H.	Ser. Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.1	9 L.	Normal	Yellow

In this patient almost similar findings were obtained as in the first case. The lesion was very high, showing that the transudation that may take place above the level of puncture colors the spinal fluid throughout, permeating the entire fluid content of spinal cord. It is worthy of mention that in these cases with yellow colored fluids it was always possible to demonstrate red blood corpuscles in various stages of degeneracy.

Mr. Hei.	Ser. Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.2	5 L.	Normal	Normal

In this patient a definite history of an injury initiated the spasticity and other signs that justified the conclusion that a traumatic myelitis was at hand. The findings of the laboratory, however, made a non-inflammatory condition a possibility not to be lost sight of. The exposed cord showed that the patient suffered from an arterio-venous aneurysm. There is no question that a trauma may have been responsible for its occurrence.

Mr. L. P.	Ser.-Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.1	5 L.	Normal	Normal

Upon inspection after the dura was opened the opinion arrived at was syringomyelia. The patient claims that he feels better.

Mr. O.	Ser. Wass.	C.-S. Fl. Wass.	Glob.	Cells.	Fehling.	Color.
	Neg.	Neg.	+0.1	4 L.	Normal	Normal

This patient for a time was an inmate of the Neurological Institute. He showed signs of a tuberculous nature in one of his apices and besides this a prominence of the spine, and considerable pain. All this and other considerations made the diagnosis of tubercular meningitis a very probable one. An operation was never suggested and as nothing could be done for the condition, the patient was transferred to another institution. The

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same diagnosis was arrived at there, and it was suggested by the surgeon consulted in the case that a study of the spinal fluid be undertaken. This seemed appropriate, as no lumbar puncture was ever made on the patient. The resulting analysis as scheduled above did not show the characteristics of an active tubercular process. The possibility of a cord tumor suggested itself instead, and as a last resort, an operation was performed. A tumor mass was removed of most unusual histology. Here and there small islands of lymphocytic infiltration in a dense ground substance of what looked to be fibrous tissue. The pathological report submitted pronounced the condition to be a chronic fibroplastic meningitis.

As can be gleaned from the above exposition, the chief characteristics of the spinal tumor serology, or rather the serology of abnormal intradural conditions, is primarily a great increase in the protein (globulin ?) content of the spinal fluid; secondly, the absence of a marked increase in the cellular elements that such an increase of protein is usually accompanied by. The above two findings together with the occasional presence of a yellow color and at times the absence of a Fehling reduction ought to make one very cautious in rendering an opinion against the existence of a surgical intradural condition. My conclusions therefore are:

1. It is possible to differentiate serologically between paresis and cerebro-spinal syphilis.

2. A very marked excess of protein without a lymphocytosis is suggestive of the presence of a surgical intradural condition.

3. The above facts are of value only when collated with clinical facts.

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EXCITING CAUSES IN PSYCHIATRY.*

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As the rôle which heredity plays in the etiology of insanity becomes more clearly understood new problems present themselves to the student of psychiatry. The significant fact that only about one-fifth of all subjects who have inherited the neuropathic constitution have at any time in their lives manifestations which necessitate their confinement in institutions leads to the question, What are the special causes of such manifestations? The present work is a study of data pertaining to this question.

§ 1. Statistical Analysis of 1056 Consecutive Hospital Admissions.

During the year ending September 30, 1911, 1056 patients were admitted to the Kings Park State Hospital: 494 men and 562 women. Of these, 279, distributed as shown in Table I, presented psychoses which have been excluded from this study.

Table I.—Cases Excluded From the Present Study.

	Men.	Women.	Total.
Imbecility with insanity	4	4	8
Epilepsy with insanity	12	19	31
Huntington's chorea with insanity	..	2	2
Central neuritis (at time of admission)	2	..	2
Senile dementia	17	30	47
Cerebral syphilis	2	..	2
General paresis	76	19	95
Cerebral arteriosclerosis	19	10	29
Pellagra with insanity	..	1	1
Traumatic psychosis	1	..	1
Alcoholic psychoses	47	14	61
All psychoses	180	99	279

Of the remaining 777 cases, 520 or 66.9 per cent were without assigned causes. The distribution of these cases is shown in Table II. In a considerable proportion of these cases no satisfactory anamneses were obtained, and in these the fact that no causes were assigned does not prove that none were to be found; but in the majority of the cases the ordinary data are on record and the fact is that neither the patients nor their relatives were

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able to discern in the conditions of existence anything that could be regarded as a pathogenic influence; in other words, it would seem that in more than half of our cases indications for commitment have arisen in the midst of an average environment and in the absence of occasion of special difficulty or strain.

TABLE II.—CASES WITHOUT ASSIGNED CAUSES.

	Men.	Women.	Total.
Dementia præcox	116	86	202
Manic-depressive psychoses	39	99	138
Involutional melancholia	2	8	10
Paranoic conditions	14	29	43
Other psychoses	55	72	127
All psychoses	226	294	520

Thus there are only 257 cases in which causes have been assigned. A closer scrutiny of these cases shows that 31 of them are to be eliminated, as follows: In 10 cases the causes are chronologically not properly connected with the onsets of the psychoses; in eight cases co-existing bodily conditions are loosely ascribed as causes (menopause, arteriosclerosis, senility); and in 13 cases early symptoms or morbid tendencies are erroneously put down as causes. On deducting these only 226 cases remain for statistical analysis.

In 75 cases the mental disturbance has been assigned to physical causes, in 129 cases to psychical causes, and in 22 cases to combinations of physical and psychical causes. The distribution of these cases and the various groups of causes are shown in Tables III, IV, and V.

TABLE III.—PHYSICAL CAUSES.

	Dem. præc.	Man.-depr. ins.	Involl. mel.	Paranoic cond.	Other psychoses.	Men.	Women.	Total.
Alcohol	18	2	2	4	29	37	18	55
Pregnancy, childbirth, lactation	5	4	..	..	2	..	11	11
Traumatisms, operations	1	..	..	..	6	2	5	7
Influenza	1	..	..	..	..	1	..	1
Typhoid fever	1	..	..	..	..	1	..	1
All causes	26	6	2	4	37	41	34	75

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TABLE IV.—PSYCHICAL CAUSES.

	Dem. præc.	Man.-depr. ins.	Involl. mel.	Paranoic cond.	Other psychoses.	Men.	Women.	Total.
Business troubles: Financial difficulties, loss of employment, inability to get employment, overwork, overstudy, failure to receive expected inheritance, failure in examinations, failure to receive expected appointment	7	19	1	1	8	16	20	36
Death or illness of relatives: Husband, mother, both parents, child, brother, wife, nephew	9	7	4	2	9	3	28	31
Love affairs: Disappointment in love, unrequited love, death of fiancé	11	4	1	1	6	3	20	23
Sexual episodes	1	1	..	..	2	2	2	4
Domestic troubles: Unhappy married life, abuse by husband, infidelity of husband, intemperance of husband, desertion by husband, trouble with wife, unpleasant living conditions, care of invalid mother	4	9	1	1	8	2	21	23
Miscellaneous causes: Burglary, assault, fright caused by drunken man, fright during storm	3	4	..	..	5	2	10	12
All causes	35	44	7	5	38	28	101	129

TABLE V.—COMBINATIONS OF PHYSICAL AND PSYCHICAL CAUSES.

	Dem. præc.	Man.-depr. ins.	Involl. mel.	Paranoic cond.	Other psychoses.	Men.	Women.	Total.
Alcoholism with domestic troubles, death of relatives, etc	..	2	1	1	3	3	4	7
Pregancy, childbirth, lactation with abuse by husband, worry over illegitimacy, death of baby, etc	..	3	..	..	5	..	8	8
Worry over chronic gonorrhoea, over pulmonary tuberculosis, etc	1	1	..	..	2	2	2	4
Operation for hernia and death of child, separation from daughter and influenza, poor health and fright over injury to child	..	1	..	..	2	1	2	3
All causes	1	7	1	1	12	6	16	22

§ 2. PHYSICAL CAUSES.

In order to establish any factor as an exciting cause it is obviously necessary to demonstrate, in the first place, its proper chronological position in relation to the psychosis, and, in the

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second place, an actual dependence of clinical elements upon etiological elements. The material which accumulates in the shape of clinical records in the daily routine of hospital admissions hardly meets such requirements, and the statistics cited in the preceding section, being based upon such material, could not be accepted without further verification.

Alcohol, which figures as a cause in 55 cases, is to be taken up for consideration in a special study and will not be further dealt with here.

Pregnancy, childbirth, or *lactation,* either alone or in combination with acute infections, figures in 11 cases. In four of these cases the etiological rôle of childbirth seems hardly subject to doubt in view of the accurate chronological sequence; aside from that point, however, the information at hand is very scant and the manner in which childbirth has acted, *i. e.,* whether strictly as a physical cause or through its psychical accompaniments, cannot be ascertained. (Case Nos. 7981, 7784, 7682, and 7447.) In three cases it appears clearly from the histories that not childbirth as a physical cause but rather its psychical accompaniments have produced the psychoses. (Case Nos. 7075, 7083, and 7559.) In the remaining four cases it would seem that the chronological connection between childbirth and the psychoses is purely an accidental one; moreover, the available evidence indicates that other causes, rather of a psychical nature, have been at work. (Case Nos. 7700, 7594, 7225, and 7217.) Abstracts from the clinical histories of these cases follow.

M. S. W. Case No. 7981.—Manic-depressive insanity. Age 30. Admitted August 11, 1911. Maternal grandmother of patient was feebleminded. Patient had four previous confinements without mental complications.

Fifth child was born June 2, 1911; on the fifth day symptoms of infection, two weeks later operation and evacuation of pus. (No details given in history.) On the fifth day following the operation appearance of delusions: patient thought house was burning up; wanted husband to throw children out of the window; imagined she had sinned against her husband and against others.

On admission patient would not answer questions and refused food; was greatly retarded and apparently depressed. At her husband's request she was discharged as unimproved on October 14, 1911.

S. B. Case No. 7784.—Manic-depressive insanity. Age 24. Admitted June 6, 1911. Patient was married about a year prior to admission.

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Primipara, labor normal, psychosis developed suddenly on fourth day of puerperium: "Became hysterical, started to sing in jumbled tunes, was restless and could not sleep; then became depressed, said she worried about her father's drinking to excess." Very little was learned from the patient on admission as she could not speak English (uneducated Jewish woman), had to be examined through an interpreter, and did not co-operate. At her husband's request she was discharged as much improved on July 8, 1911.

L. M. CASE No. 7682.—Dementia præcox. Age 29. Admitted to the Long Island State Hospital August 31, 1907; transferred to Kings Park May 8, 1911. Patient married in 1895, at the age of 17½ years; her husband was wild and dissipated, went with other women; they had no children; in 1899 she had a spell of mutism lasting about three weeks; in 1901 she obtained a divorce from her husband and three years later married again. In 1905, following her first confinement, the patient "could not move or speak," later, became violent, made vicious assaults upon her parents, and was committed to the Central Islip State Hospital November 4, 1905, and was discharged from there June 15, 1906.

Present attack, which is the third, began seven weeks following the patient's last childbirth; she again became resistive, catatonic, and had to be tube-fed, did not co-operate in a mental examination; deteriorated rapidly and became very incoherent in her speech.

B. A. CASE No. 7447.—Manic-depressive insanity. Age 30. Admitted February 28, 1911. Patient was married in 1906; first child was born in the latter part of 1907.

During lactation following the birth of her first child the patient became run-down physically, suffered from insomnia and restlessness, grew agitated and apprehensive, thought poison was put in her food, was finally taken to the Mount Sinai Hospital and from there committed to Kings Park on September 2, 1908. After admission her condition varied greatly from time to time: At times she was depressed and retarded, at other times merely gloomy and irritable—"How can I be happy with these clothes?"—still at other times she showed elation with loquaciousness, singing, laughing, dancing, etc. She was discharged as recovered on January 24, 1910.

She remained well for nearly a year. Her second child was born in September, 1910; she soon began to get run-down again, slept poorly, became restless, excitable, noisy, irritable; called her husband "Bum!" "Slob!" "Lazy!" She was again committed, but began to show improvement in June and was discharged as recovered on September 30, 1911.

E. J. CASE No. 7075.—Psychosis allied to manic-depressive insanity. Age 26. Admitted October 6, 1910.

Family History.—Paternal grandmother had spells of excitement after each confinement. One paternal aunt is nervous, loquacious, easily upset. One brother was inclined to "take things hard;" at the age of 26 follow-

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ing business difficulties he became depressed and was later found drowned near a ferry dock; it was suspected that he had committed suicide.

Personal History is uneventful; the patient's disposition has never been very lively, she always "minded her own business," was deeply affected by adversity.

History of Psychosis.—There had been no previous attacks and the birth of the patient's first child was followed by no mental complications. During the greater part of the summer of 1909, namely from June 13 until September 5, the patient lived with her child in a summer boarding house on a farm in Sullivan County, New York. Patient is reticent whenever questioned concerning her stay at the boarding house. During her stay there her husband visited her only once, on July 20, and remained one week as he could not afford to take a longer vacation. The patient's second child was born on May 30, 1910, that is to say only 267 days after the patient's return from the country. The husband stated that from the time of its birth the patient paid no attention to the child, did not care to have it in her sight. On the fourth day of the confinement the patient's first child fell downstairs in the hallway; the patient was greatly alarmed but could not leave her bed to go to the child's assistance and the nurse happened to be out for a few minutes; a neighbor picked up the child and a little later brought her up to her mother to show that she had not been injured. The patient, however, became extremely nervous, shook violently as in a chill, and a telephone call was sent in for the physician who had attended her in her confinement; he gave her some sedative powders. About two days later the husband told the patient that her cousin was down with typhoid fever and this aggravated her nervousness. A week later lactation suddenly ceased; the patient worried over that, brooded all the time, continued to suffer from insomnia, and ate poorly. The care of the baby fell entirely to the patient's sister as the patient continued to neglect it.

The patient gradually grew worse and expressed to her husband the fear that she would lose her mind; later she feared that something terrible was going to happen and they would all be arrested, the husband's business would be taken away from him and they would be ruined. Two or three times she suggested to her husband that the best plan for them would be to kill the children and then commit suicide to avoid the terrible things that awaited them. Once she examined her husband's razor to see if it was sharp and if it could be used as a weapon for committing suicide. Finally she made an actual attempt to kill herself by means of illuminating gas. Thereupon the husband decided to move to the house of the patient's aunt where she could be better watched when he was away at his business. Soon, however, she began to refuse food and on Sunday, September 11, 1910, she was taken to a private sanitarium; she would not remain there and prevailed upon her husband to take her home. On the following Tuesday the patient asked her husband not to leave the house as something would happen and they would all be arrested; he attached no special significance to her warning on that day but left as usual to

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go to his business. That day for the first time in many weeks she took her boy in her arms, walked around the room with him several times, then went to the window and opened it, as her aunt thought, to get a napkin for the baby from the clothes line. Instead of that she leaned over and dropped the baby out of the window. The baby was killed instantly.

When the police arrived to arrest the patient her aunt attempted to explain the occurrence as an accident which had resulted from the patient's weakened and nervous condition, but the patient exclaimed, "No, I am the murderess, give me the electric chair!" When her husband came she said, "I told you something would happen and we would all be arrested." At the trial which followed she was acquitted on the ground of insanity. She was then taken to the Kings County Hospital where she was noted as being depressed and dejected and expressed the idea that God was punishing her and that she would never die.

On admission she showed no abnormality on physical examination. Mentally she was quiet, appeared depressed and somewhat apprehensive; asked if she would be allowed to stay here; she conversed in a low tone and when telling of her troubles her eyes would fill with tears. She admitted having attempted suicide and having suggested to her husband that they kill the children and then both commit suicide; she said she did not know why she had thrown her baby out of the window but believed it was due to a crazy impulse; said God was punishing her for that act. Although she co-operated well in the mental examination in a general way, yet it was impossible to get her to give any reason for her attempted suicide or for throwing her child out of the window; she would say simply, "I don't remember now" or "What difference does it make? You cannot help me!" Several days after admission she expressed the idea that her husband had married another woman and that she had been hypnotized and thus influenced to throw her baby out of the window. In January, 1911, she became noisy and agitated, said she was in prison and that she had ruined her church and her family, yet in reply to all questions would say only "I don't know." In July, 1911, she began to show improvement, grew calm, and finally recovered and was discharged on December 26, 1911.

M. H. S. Case No. 7083.—Dementia præcox. Admitted to Dr. Morton's Sanitarium July 7, 1909; committed to St. Vincent's Retreat November 29, 1909; transferred to Kings Park October 10, 1910. Age 23. Patient was married January 20, 1909. In March she thought she was pregnant, took some medicine, was very sick after it, flooded a great deal, and was in bed four or five weeks. First mental symptoms appeared in June; she came home alone from the railroad station, fainted on coming into the house; and when she came to she said some men acted suspiciously toward her, was afraid to go out after that. The history is very meagre.

On admission to Kings Park she said: "They said I was not married and that I was immodest and immoral, and they said I was not married and that I was impure."

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R. C. Case No. 7559.—Dementia Præcox. Admitted to the Long Island State Hospital July 31, 1896; transferred to Kings Park April 11, 1911. Age. 22. Child was born early in June, 1896; psychosis developed suddenly within a few days; patient said the doctor gave her poison because he wanted to marry her; later she complained of being unable to ride in the street cars on account of the electricity affecting her head.

On admission to the hospital the patient said: "I think it was religion that went to my head. I am of Protestant faith, I think I ought to be of the same faith as my husband; my father was a Protestant."

She showed rapid deterioration and on her transfer to Kings Park was incoherent and did not co-operate in a mental examination.

A. V. Case No. 7700.—Dementia præcox. Age 30. Admitted to Long Island State Hospital January 4, 1910; transferred to Kings Park May 8, 1911. History of previous attack in 1901 occurring without known cause; patient was mute, resistive, refused food; she recovered after six months and returned to her work; married in March, 1902; first four confinements were without mental complications.

Fifth child was born in December, 1909. Psychosis began a few weeks before confinement. Patient had a vague idea that her sister was interested in her husband, wept a great deal, said she knew she was going to die. On the night of the confinement she became disturbed, jumped up and down, sang, shouted, pounded on the floor; the child was born in a few hours; she did not seem to care anything for it.

On admission: Who brought you here?—"Well, who brought me here? Who threw it over my face and brought me here?" What is your name? —"Mrs. V. Respectably married at the altar!" Have you any children? —"Yes, I have children. (Jumps up.) A lawfully married woman, I am!" Whenever questioned as to her condition she would invariably stop answering.

M. M. Case No. 7594.—Manic-depressive insanity. Age 42. Admitted April 20, 1911. One sister is excitable. Patient is an ignorant superstitious Italian woman, never went to school.

Patient was confined November 7, 1910, remained in bed two weeks, then was up for a month. In the meantime the whole family had the grip; the patient finally caught it and was confined in bed with it during the last two weeks in December; while she was sick she developed the idea that a woman who was unfriendly to her and who had at one time tried to prevent the marriage of her daughter, had put some powder on her head. (The patient's daughter stated that some Italian people believe that sickness and ill-luck can be caused by jealous enemies putting some powder on the head.) The patient worried, became downhearted, ate poorly, and was finally committed.

C. H. Case No. 7225.—Psychosis allied to dementia præcox. Age 28. Admitted November 30, 1910. When a child patient used to cry a great deal, was called a "cry baby." Married May 9, 1909.

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Child was born on March 10, 1910; birth was difficult, forceps had to be used, there was a complete tear of perineum, considerable hemorrhage, and on the third day symptoms of infection. Patient was taken to the Norwegian Hospital on March 16 and remained there until June 29; while there she was at times delirious, at other times clear but delusional. At home delusions continued active so that patient finally had to be committed.

On admission patient stated that her trouble had begun before her child was born and attributed it to her husband's love for her growing less. "He was all right but different than a long time ago. I always thought he would leave the baby and me." "Before I was sick I had to make a silk dress for myself, and it had a check design; I never had it made; they all wanted it made for me, but I would not let them. Then when I went in the cars every person that came in had a check dress on, and I used to think that because I did not have it made they came in like that."

S. A. CASE No. 7217.—Psychosis allied to manic-depressive insanity. Age 27. Admitted November 29, 1910. Patient has always been nervous. Married in 1903 at the age of 20 years. Had four children and one miscarriage without mental complications.

Psychosis developed gradually about six weeks after the birth of her last child. Commitment paper states that she acted strangely, charged her husband with infidelity.

On admission patient gave the following account of her trouble: "I was tired out caring for the house and the children and I thought that my husband was going with my sister. Thanksgiving night I sat with the baby and I thought that my husband had gone out with my sister, so I sat up and watched for her, and she came back at three o'clock in the morning. Another time I imagined I heard my husband kissing her. I thought he was deceiving me, that was the whole trouble." Patient was discharged as recovered December 14, 1910.

Traumatisms and surgical operations are the assigned causes in seven cases. The relationship between these alleged causes and the psychoses is similar to that between childbirth and mental disturbance. In two of the cases there is accurate chronological connection, but the manner in which the causes have acted cannot be ascertained owing to insufficiency of the data. (Case Nos. 7752 and 8024.) In three cases the trauma or operation, while shown by the history to play a real part in the production of the psychosis, evidently acts not as a physical cause but through its psychical accompaniments such as worry, discouragement due to discomfort or disability, and the like. (Case Nos. 7121, 7451, and 7497.) In the remaining two cases the relationship between the assigned cause and the psychosis seemed

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to be merely one of accidental coincidence in time. (Case Nos. 7587 and 7883.)

M. B. Case No. 7752.—Female, colored. Age 47. Psychosis unclassified. Admitted May 25, 1911. Patient often drank to excess. About four years prior to admission she fell downstairs and from that time has been peculiar; at times she got excited and hooted and hollered at people out of the window; would not keep any clothes on. On admission patient was restless and disturbed; she was found to be stone-deaf and almost illiterate so that a satisfactory mental examination could not be made.

J. R. Case No. 8024.—Psychosis allied to manic-depressive insanity. Age 25. Admitted September 1, 1911. Scarcely any history obtained in this case. Some time prior to admission (date not ascertained) the patient fell down a flight of stairs and sustained cuts about the back of the head and on the face; for a day or more she was unable to recognize her husband; she was paralyzed and could not stand up and remained in bed for two weeks; on recovering from the injury she began to act queerly, was afraid to go out because, she said, people followed her about in the streets, said she saw God and heard God's voice.

On admission no evidence of organic lesion was found on physical examination; the patient did not cooperate properly in a mental examination, mumbled to herself and when questioned said angrily, "Mind your business!" She gave, however, spontaneously a history of falling suddenly a number of times with no memory about it afterwards.

J. R. McK. Case No. 7121.—Psychasthenic condition. Age 50. Admitted October 26, 1910. Patient's father was a periodic drinker; mother has always been very nervous.

Twelve years prior to admission the patient was operated on for varicocele; no information was obtained concerning the patient's mental condition before the operation, the nature of the indications for operation, etc. Following the operation he became nervous, was afraid to go anywhere; then began taking drugs: nux vomica, coca, rectal douches; he went to doctors and was advised to marry again, which he did nine years ago. Got along well for a few years, but five years ago began to act queerly; he suspected his wife of infidelity and accused her of giving him poison, at times he masturbated, exposed his person at the windows, said he was burning up with passion; at other times he had destructive impulses, broke dishes, flower pots, a lamp and an umbrella; about four years ago he had a stupid spell lasting several weeks; his mind seemed to dwell much on sexual matters; his wife stated that he was sexually weak for the past three years and in the last six months entirely impotent and unable to have intercourse. During five years he had not worked and with his own consent his wife had him committed.

On admission his condition was mainly one of hypochondriacal depression; he said he could not work, felt weak, thought he was losing

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seminal fluid with his urine, and asked to be given some medicine that would cure him.

D. R. Case No. 7451.—Psychosis allied to manic-depressive insanity. Age 48. Admitted February 28, 1911. Patient's father was alcoholic; one brother died insane at the Long Island State Hospital.

History of three previous attacks, the first beginning in 1898 with insomnia; in December, 1900, the patient was operated on for rectal polypi; after the operation he became depressed, later restless and excited, expressed the idea that he was Jesus Christ; recovered and was discharged in 1903. Second attack developed gradually without apparent cause in the latter part of 1905; he became depressed, stopped working, mutilated his penis with a wire; was committed in March, 1906, and discharged two and a half months later as recovered. Third attack, also one of depression, developed gradually in March, 1910, without apparent cause; patient was committed in May and discharged as recovered November 17, 1910.

Present attack, the fourth, began in January, 1911. Shortly after the patient's discharge in November, 1910, he began to complain of trouble with his rectum, of which he had never been completely relieved since the operation in 1900; he went to the Long Island College Hospital and was told that another operation was necessary; at first he consented, but three weeks later when the time for the operation came he lost courage, changed his mind about having it done, and left the hospital; at home he continued to have discomfort in his rectum; he though he could feel a tumor there, made an incision in it himself with a knife, thought on account of the apparent incurableness of the trouble that it was cancer and that he could never be relieved of it; he began to worry, became depressed, spoke of committing suicide, and had to be recommitted.

N. R. Case No. 7497.—Undifferentiated depression. Age 39. Admitted March 17, 1911. Patient was always of a quiet and rather melancholy disposition. About a year prior to her admission she was operated on for the removal of an abdominal tumor; she seemed to make a good recovery but soon began to complain of pain and discomfort at the site of the operation, spoke of a burning sensation, and suffered from constipation; she became melancholy and partly on account of her physical disablement, partly on account of her depression she could not do her work properly. On admission she said she felt discouraged to think that after having gone through an operation and all the rest of it she was hardly any better than she had been before; she thought the trouble might be due to worms, but did not know; begged the physician to take instruments and ascertain the cause of her illness.

E. S. Case No. 7587.—Psychosis allied to manic-depressive insanity. Age 23. Admitted April 18, 1911. Some time before the onset of mental trouble—exact interval unknown—the patient was operated on for abscess of the breast; the wound healed quickly, but the patient became nervous and much excited, and had to be committed.

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On admission the patient co-operated very poorly; spoke mostly in Yiddish. The following are some of her spontaneous remarks: "I am not afraid of my life, I am ashamed of my life, I am ashamed of my family, I want to be killed."—"I lived with a thousand men."—"My husband left me seven months ago. I am dirty and will be cut into pieces."—"When I married my husband I was clean."—"I was always crazy."

L. W. CASE No. 7883.—Dementia præcox. Age 22. Admitted July 11, 1911. Patient was backward in school; always had a headstrong disposition.

She was expecting to be married, but as the man had some affair with another girl she thought he ought to marry the other girl and gave him up; on the night of the wedding she was quite broken up. Shortly after an Italian young man fell in love with her and because she did not care for him he drew a stiletto and threatened her; since that time the patient complained of being afraid of Italians.

She worked very hard as domestic, often until ten or eleven o'clock in the evening; she began to eat poorly, said she could not sleep, became run-down, cried a good deal and complained of being lonesome. On June 1, 1911, she fell from a bicycle and came home sick and nervous; after that she became absent-minded and had to be spoken to sharply when addressed; she was therefore taken to the Kings County Hospital where she seemed to improve so that she was employed as unpaid orderly on the children's ward; but in a few days she again became nervous and cried and was sent by the matron to St. Peter's Home; there she became "hysterical" protesting that it was a religious house and different from her religion; she was then committed.

On admission her condition was largely as described above and in addition she expressed the idea that she was Lillian Russell; later developed the idea that another patient on the ward was her dead mother who had come back to life.

Acute Infectious Diseases.—Of all the year's admissions the mental disturbance was in but two cases attributed to acute infectious diseases: in one case to typhoid fever and in the other to influenza. It would seem that the fact alone of the great rarity of this finding would cast great doubt upon any assumption of potency as possessed by the acute infectious diseases in the production of insanity; this is said, of course, not with reference to febrile and infectious deliria.

In view of the prominent position assigned almost universally by writers on psychiatry to infectious diseases as causes of insanity it is curious to note that even in the two cases which were found among our year's admissions the part supposed to have been played by infection is far from being fully established.

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In the first case (No. 7345), the anamnesis was furnished by the patient's mother who is evidently of a low degree of feeble-mindedness and whose memory and judgment could hardly be relied upon; her son was admitted to this hospital ten days following his discharge from a general hospital where he had been laid up with a severe attack of typhoid fever; he presented on admission evidences of advanced deterioration, yet the mother stated that his mental trouble had begun but two or three weeks previously. In the second case (No. 7723), the data were obtained in part from the patient's wife and in part from the patient himself; the psychosis developed gradually in the early part of 1907 and his first admission was to the Central Islip State Hospital; on his admission there the wife stated that his trouble was due to excessive drinking; following his discharge from that institution as improved and on his readmission to Kings Park she ascribed his trouble to grippe; the patient himself, however, who was able to furnish a detailed history denied ever drinking to excess or ever having had an attack of influenza.

P. M. CASE No. 7345.—Dementia præcox. Age 28. Admitted January 13, 1911. Patient's mother is feeble-minded. Patient's own history prior to onset of mental trouble unascertained.

On October 4, 1910, patient was taken to a general hospital suffering with typhoid fever. He got along well for three weeks when he had a relapse, became delirious, and had to be tied down in bed. He returned from the hospital on January 3, 1911; at home he appeared confused, imagined he heard noises up stairs and that someone was following him around, was excited and apprehensive at times; at other times would not speak and took no notice of things about him.

On admission he appeared greatly deteriorated, did not co-operate in the simplest mental tests, but quite spontaneously stated that his mother was dead and that another woman was trying to impose on him by passing herself off as his mother. Soon after admission he became mute, resistive and extremely untidy.

S. F. CASE No. 7723.—Dementia Præcox. Age 39. Admitted May 13, 1911. Patient's first admission was to the Central Islip State Hospital April 9, 1907. His mental trouble was said to have begun about a year previously and was attributed to excessive drinking. Patient had auditory hallucinations, expressed the suspicion that poison was put in his medicine, and said he was the Supreme Being. He was discharged as improved May 12, 1908, but was indolent and apathetic at home, continued to have hallucinations and express various delusions, at times became

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restless and excited, and finally at the end of three years had to be again committed.

On admission he presented a condition essentially as described above. His wife in giving the anamnesis described the onset of his trouble five years ago but attributed it this time not to alcohol but to an attack of grippe. The patient himself furnished a detailed history; he admitted drinking on infrequent occasions and very moderately, denied ever being drunk or drinking to excess; he stated that his trouble began five years ago with very severe headaches from which he suffered daily, but said he never had had the grippe.

§ 3. Psychical Causes.

The statistics cited in the first section of this paper show that, on the basis of histories furnished by patients and their relatives and friends, psychoses are much more often attributed to psychical than to physical causes. The errors that would result from the tendency which such informants have of regarding early symptoms as causes are to some extent eliminated in the work of compiling statistics, the prevailing policy being not to record such factors as worry, grief, jealousy, and the like, as causes unless there is a history of happenings in the environment of the patient which could be regarded as a more or less adequate basis for the worry or grief, or jealousy, as the case may be, to which the mental breakdown is attributed; and in the preparation of the statistical tables for this paper some cases were further eliminated in which the error seemed to have entered of mistaking early symptoms for causes. On the other hand it would seem worth bearing in mind that oftentimes it would be hardly of any advantage, were it possible, to make a sharp distinction between causes and early symptoms; for in every case we are concerned not merely with the effect of a given environment upon a given individual but rather with products of the interaction between the two. While we are, no doubt, justified in assuming that environmental factors through their influence upon the individual are responsible for certain reactions, we are equally justified in assuming that pathogenic environmental situations are often themselves created by the individual owing to his own inherent or acquired characteristics and tendencies. As will be seen from some of the case histories to be cited, there seem to be many ways in which neuropathic personalities may become involved

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in vicious circles with progress from bad to worse, so that it is actually easier to understand the observed manifestations by surveying the many factors in their complex interrelations than by attempting to discern among them some special agency as alone exerting a pathogenic influence.

In view of these considerations it seems clear that the material for a study of psychical causes should consist not of bare statistical data or of clinical case notes but rather of biographies giving all essential details having any direct or indirect bearing upon the mental disturbances. Such biographies obtained in cases that are clinically fairly representative may, even if limited in number, enable us to safely establish generalizations concerning etiological mechanisms of the commoner psychoses.

The first case is that of a printer, 61 years of age, with a neuropathic family history, who was somewhat backward at school, and whose disposition is described as sensitive, rather stubborn, and at the same time sombre with an undue inclination to worry. At the age of 56 years, four years following the death of his first wife he married a second time and within three years had two children. Following much friction and finally an open altercation with a newly appointed superintendent in the printing establishment with which he had been connected for twenty years, he gave up his position. This caused him worry and fear for the future of his wife and young children; owing to his age and other handicaps he found himself unable to secure permanent employment, gradually because discouraged, lost his appetite and sleep, became run-down physically, and was finally totally incapacitated by an anxious, agitated depression with self-accusations and ideas of suicide; following commitment he showed pronounced retardation and thought difficulty; later on he showed considerable general improvement with, however, persisting hypochondriasis and lack of self-confidence.

W. T. D. F. Case No. 7422.—Manic-depressive psychosis. Age 61. Admitted February 15, 1911.

Family History.—Paternal grandfather drank, as a rule moderately but at times to excess. Father was of a nervous temperament, easily excited, often out of sorts. A sister had nervous prostration at the age of 52 years without known cause: she was restless, sleepless, worried all the time; went to a sanitarium and at the end of four months was discharged

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as recovered. One daughter had nervous prostration at the age of 18 years which was ascribed to overstudy in high school; she was in a sanitarium three months and discharged as much improved.

Personal History.—Patient went to school at the age of six years and had to leave at the age of 12 years owing to his father's reverses in business; at that time he had just passed from the primary to the grammar department; he states he was below the average in his studies. After leaving school he was newsboy, errand boy, and finally at the age of 15 years entered the printing business in which he remained until two years ago. In former years he drank somewhat immoderately but in recent years he has been totally abstinent. When patient was 52 years old his wife died, and at the age of 56 years he married again and now has two children four and one and one-half years old, respectively. Patient describes his own disposition as rather sensitive, perhaps stubborn, not inclined to acknowledge himself as being in the wrong; his wife states that since she has known him his disposition has been gloomy and unduly worrisome.

In the fall of 1889 the patient obtained a position in the printing office of a blank book company; at first his wages were $20 a week but in a few years he became foreman and was advanced to $23 a week. About 19 years later the firm appointed a new superintendent who soon began to introduce stricter supervision and new measures of economy; he was not popular among the employees, especially the older ones, and unpleasant friction soon developed between him and the foreman. The foreman resented the many suggestions offered by the superintendent concerning details of the work, as he felt that he understood the work better, being an experienced printer which the superintendent was not. The foreman and some of the older employees had been accustomed to receive more or less special consideration from the firm, owing to their length of service; although the nature of the business and the foreman's duties made it impossible for the firm to allow him an annual vacation, yet he was often permitted to take half a day or a day off with the understanding that no deduction would be made from his wages; but the new superintendent thought it necessary to put a stop to that practice and thought it best to begin with the foreman; accordingly when the latter asked for permission to be away for two days he was told that the proper amount would be deducted from his wages.

In March, 1909, the firm received an order for some ledger books; the sheets were printed from a standard form composition on the date line of which the figures for the year were 190....; as the books were intended for use in the following year, 1910, and later, these figures should have been changed to 191....; this was not done and the work was spoiled in consequence; the superintendent blamed the foreman for the damage on the ground that he was charged with the duty of proofreading; the foreman, however, maintained that he had not been told that the books were intended for use in 1910 and that the change in the old com-

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position forms was to be made, and further, that before allowing the sheets to be printed he had submitted a sample sheet to the office; he and the superintendent had words over this matter and finally he was told that he could "get through" if he wanted to, and he did so.

Patient had saved no money and it was important for him to find some new means of support for himself and his family. He tried to make a living by selling advertising novelties; in spite of his perseverance he found at the end of about a year that he could make no success at it; he could contribute but little toward the support of the house, the means of support being derived principally by his wife renting out some rooms in the house to lodgers; some little assistance was occasionally offered by the patient's older children. Early in 1910 the patient decided to go back to the printing business and secured work during a rush season of six weeks in a large printing office at $20 a week. A few weeks after there was a similar rush season in the same office and extra help was needed, but they refused to re-employ the patient as his work had not been up to the required standard; the patient states that owing to his having been in the blank book business for twenty years he had really fallen back in his skill as regular compositor, so that his work compared unfavorably either in speed or in accuracy with that of the average man in the business; besides he was then already about sixty years old, was not up to date in his methods, not quick to learn, and not very strong. After that he got work in two other printing offices but after a few weeks in each place was dismissed owing to his work not being satisfactory. He then tried an agency for vacuum cleaners but failing in that and not knowing what else to do again tried selling advertising novelties.

Psychosis.—The patient states that his trouble began gradually shortly after he gave up his position in the blank book company. He worried a great deal, lost considerable sleep, was anxious for the future of his family, especially the wife and the two young children; as he failed in the various things which he undertook he became more and more discouraged; he realized his handicaps of age and reduced efficiency in general, and the more he worried the more he suffered with insomnia and loss of appetite, so that finally he became much run down and weighed only 108 pounds. Having failed in everything he undertook and having become physically almost a wreck he lost all ambition and just brooded all the time over his troubles; he thought it was careless of him to act so rashly when he gave up his old position, felt he was responsible for the misery of his wife and young children who suffered innocently through him, developed the idea that he was being punished by God, said that he was only a burden to himself and others and that it were better if he were out of the way. On account of his failing health he consulted a physician to whom he complained of headache, nervousness, insomnia, and loss of appetite, but the tablets which he received did him no good; finally he became terribly restless and agitated, would not stay in bed unless kept there and watched all the time, and was committed on the advice of a physician.

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On Admission.—The physical examination showed poor general nutrition; height 5 feet 3¾ inches., weight 108 pounds. Mentally he was deeply depressed, was greatly retarded in all movements and in speech, continually complained of inability to collect his thoughts and concentrate his mind and co-operated in the examination with great difficulty, though willingly. He was well oriented and showed no memory defect; he expressed the same ideas and fears as prior to admission.

Following admission he soon began to improve and by the latter part of September, 1911, he had gained 26 pounds in weight, slept fairly well, had regained his appetite, said he had almost recovered from his depression, felt that his mind was more active, and no longer had the idea of being punished by God; he did some work in the basket shop; although he did not as yet feel quite self confident he asked to be allowed to go home on parole to see how he could get along. He went home with his wife but in less than a week became again restless and worried, said he had no confidence in himself, and begged to be taken back to the hospital. On his return he seemed to be greatly relieved and said that he felt that he was better off here than at home. His condition then remained about the same for a couple of months but in December, 1911, he again became depressed, said everything looked blue and he felt he could never recover, stopped going to the basket shop but sat around by himself on the ward brooding over his condition. Although he has continued to improve physically and to gain in weight his hypochrondriacal ideas became rather prominent; he now (January, 1912) complains of weakness in the limbs and will not go out with the other patients for the daily walk. complains also of constipation and poor appetite; states also that he is much bothered with excessive salivation: "It seems to me that I am failing slowly and gradually and it does not seem that I am going to get better. I haven't as much strength as I used to have to get out and walk." He is no longer agitated or very anxious, but still worries a good deal at times: "My wife has so far been able to make ends meet, but how long that is going to hold I don't know; she has a pretty hard row to hoe." When he is visited by his wife he feels more keenly than at other times his failure and seems to find it necessary, by way of justification, to emphasize and even exaggerate the amount of his disability; will not eat what she brings him except when she is not looking; told his wife he was so sick he was going to die soon.

The next case to be cited is one in which the psychosis has been attributed to destitute circumstances. The patient, a seamstress, 62 years of age, single, of somewhat neuropathic family history, retiring, hard working and conscientious, of distinctly inferior intelligence, gives a history of her first and only love affair at the age of 15 years with failure of marriage due partly to some scruples of her own, partly to her mother's opposition;

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after that she led a monotonous existence: gradual reduction of family by death and dispersion; for years care of invalid mother and later of paralyzed and epileptic brother; employment at white vests for 44 years, 28 years in one place; during latter years living alone with deaf and weak-minded older sister; loss of savings due to imprudent investments; reduction of earnings due to changing business conditions and to decreasing endurance on account of old age; finally loss of position, inability to pay rent, dependence on charity, very destitute condition. Then came sudden development of hallucinations; at first threats and annoyances, then defamations of character, accusations of immorality with special reference to old love affair, later summons to court to answer charges, many delusional elaborations.

S. M. CASE No. 8060.—Paranoic condition. Age 62 years. Admitted September 16, 1911.

Family History.—A maternal uncle had traumatic epilepsy. A maternal aunt suffered from severe headaches. One maternal cousin is described as being nervous, high-strung, hysterical; another, at the age of four years "cried with grief when his grandfather died, they could not pacify him"; he died a year later, but the cause of death is unknown. One brother had traumatic epilepsy. Another was of a nervous, irritable temperament; one of his boys was a wayward spendthrift. One sister died after childbirth, was delirious toward the end. Another sister is living, is weak-minded, queer, delusional.

Personal History.—Patient was born in Kentucky, April 20, 1849. In childhood she had measles, mumps and croup, from all of which she made good recoveries. She went to school at the age of seven years, but at the age of 14 years she had to leave school on account of the Civil War to which her brothers went and which left the family in straightened circumstances, so that her original plan to study to be a school teacher had to be abandoned. The patient states that she was bright at school, but a friend who has known her for years states that she had not succeeded in learning even how to read and write properly and her examination on admission showed that she was below the average. *Q.* "Name the oceans?" *A.* "Atlantic and Pacific; I can't tell those." *Q.* "12×13?" *A.* "144." *Q.* "$21 - 9$? *A.* "11." She wrote Methodist and Electricity as follows: "Meethist. Elictricty." Patient's disposition has always been retiring, seclusive and modest; she states that she never cared for theaters or for dancing or parties, never visited much, hardly ever read the papers; "always felt more free among ladies than among gentlemen." On leaving school she helped her mother at home with the housework.

At about that time, her brothers having gone to the war, the family moved to a double flat house on Metropolitan Avenue, Brooklyn (then

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North 2nd Street), the other apartment on the same floor being occupied by a family with whom a relative, Mr. John F., was boarding. This man was then 26 years old, the patient's age being something over 15 years. Patient states: "We lived there six months before he saw us. My mother was that way, she never let anyone see us. But when my brother came back wounded from the war Mr. F. used to come in to see him. I only saw him once or twice in the rooms. Sometimes I would meet him when I went to the store. We would pass the time of day and go on. He always stopped as a gentleman and spoke to me. I seemed to remind him of his wife who had died about a year previous to that. Nearly a year after we moved into the house he spoke to my mother asking if she would let him marry me." The patient's mother refused on the grounds of too great disparity in ages and that she did not wish her daughters to marry young but preferred them to stay single as long as they could; further she said she did not think her daughter cared for him. Mr. F. argued that since the patient's mother was in delicate health she should consent to have him marry her daughter as he could care for her better than a younger man; as to the patient's not caring for him, he felt sure that she would learn to like him. The mother spoke to the patient about it, told her she was very young and ought to consider the matter very seriously, as later she might see other men who were younger and be disappointed in her husband. A few days after that Mr. F. met the patient on the street and asked her to ask her mother for permission to marry him. She said: "I should think you would come to me first and ask." Besides, she said, she knew that her mother would not sanction it on account of her being too young. It seems further that Mr. F. was at that time keeping company with a young lady to whom he was at one time engaged for several years but had broken the engagement and married another; after his wife died he again began keeping company with his former fiancée, but he told the patient that he would rather have her; but the patient said to him: "No, you cannot have me; the lady that you are engaged to loves you better than I do; that is the one you ought to have. I wouldn't stand in any woman's light." About a year after that happened Mr. F. married the young lady to whom he was engaged. Some months after he was married his health began to fail and he had to go to Europe for his health. On his return, which was about two years after his marriage, the patient's mother met him in the street; he was looking very poorly and in the course of the conversation he said: "I don't think I can live longer without Sarah. I am an unhappy man!" The patient states: "Of course, I was delighted to know his love was so deep, but I thought he ought to think more of his wife." Shortly afterward the patient met Mr. F. in the street; he stopped and spoke to her as follows, as related by her: "Well, Sarah, I am not long for this world. I am going to die. All I want to say, remember me! You are young yet and you don't know men, but you will never find as true a man as I am, if I do say it myself. When I am dead and gone I hope you will come to my grave

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once in a while. Don't think lightly of me!" Patient answered: "No, I shall not go to your grave, as it isn't my place; it is your wife's place and not mine." When he died about four months later she went with a friend to see the remains: "I thought it was no more than to show respect, as he always showed respect to our family and was always kind and gentlemanly." She never went to his grave. The patient has not admitted that she was at any time in love with Mr. F., maintaining that it would not have been proper under the circumstances. Her sister, however, has stated that the patient was deeply in love with Mr. F., but that she would not marry him as he was engaged to marry another. But the affair broke her up; for many years she has almost constantly had it on her mind, and very frequently spoke of it; "she has never been the same since." When the patient was asked shortly after her admission to the hospital if she thought she had done wisely in refusing to marry Mr. F. her answer was: "No, I had to do it on account of the conditions at home. We simply sacrificed our own lives to our home." She was evidently referring to the necessity to remain at home with her mother when all the brothers had gone to the war.

After helping her mother in the housework for about three years the patient, then 18 years old, went to work at white vests; she worked in several different places for a number of years, but finally secured a position in Mrs. Chamberlain's establishment where she worked for twenty-eight years. Mrs. Chamberlain took orders from firms in New York and employed women to do the work at her house. The patient's earnings went for the support of the household. The mother, who was an invalid and during the last twelve years of her life blind and almost helpless, died in 1886. About two years later the father died and what inheritance was left was, it is said, not fairly divided so that the patient and her sister, who remained at home and had to care for their brother who had been injured in the war and who was paralyzed and epileptic, received less than their proper share. Their brother, however, was receiving a pension of $50 a month and that helped to support the household. Finally he died in 1890, so that only the two sisters were left with no other mans of support than their own earnings and about $2000 which was left them. At first they got along fairly well; the patient's sister was able to contribute something toward their living expenses by what she earned as agent for the *Ladies' Home Journal*. After a few weeks, however, she had to give that up as she was growing old and the work of keeping house was all she could do. The patient's own earnings gradually fell off owing to competition of factories for making white vests which were starting up. They found it necessary to draw on their principle in order to meet expenses, and they had some losses owing to ill-advised investments in silver mine stock and in a patent auto-mailing machine. The money was finally gone and during the past year they had to subsist wholly on the patient's earnings which had grown less, not only on account of lower compensation due to competition but also because the patient, growing old, was no longer

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able to produce as large an output as she could formerly. Thus they had to live on $6 or $7 a week and at times received charitable contributions from church members.

During the past seven years the patient and her sister occupied an apartment on the top floor of a three story and basement house where the monthly rental was $11. They lived in a very retired way and had very little to do with the neighbors. In January, 1911, Mrs. Chamberlain, for whom the patient had worked for many years, had to go out of business, being no longer able to compete with large factories. Thus the patient lost her position and had to depend on what she could earn by doing plain sewing at home for friends. Then the two sisters became utterly destitute. In April, 1911, their rent was three months overdue, they had food but irregularly, yet they refrained from calling on their friends among the church members for assistance.

Psychosis.—About the middle of April, 1911, the patient went to the window to take in some clothes which she had hung out on the pulley-line when she suddenly heard a woman's voice say: "I'll make it hot for you!" As she looked up she was surprised to see a woman who lived in the neighboring house shake her fist at her. During the week whenever the patient's sister sat near the window someone in the neighboring house would say: "She is sitting there all the time looking down into our rooms." As a matter of fact, the patient states, her sister was accustomed to sit with her back almost fully turned to the window and never looked into the neighbor's rooms. The patient spoke to her sister, asking her not to sit by the window and not to hang any clothes out on the pulley-line as the neighbors did not like it; but her sister protested that they had a right to do as they pleased in their apartment and if the neighbors had anything to complain of they should go to the landlord; the patient, however, said that her sister could readily disregard the remarks of the neighbors as she did not hear them, being deaf, but that she was made very nervous by their annoyances, and she finally prevailed on her sister not to sit by the window and not to hang out any clothes. "Then they found out that we pleased them in that so the shades did not please them; they said: 'If you pull them up high it is wrong, the house isn't good.' Then we pulled them down low, but it was the same, it was wrong too." One morning, as the patient crossed the room to go over to the sink, she overheard the woman, who had started all the trouble, say to her son: "Why don't you go to work?" and he replied: "No, I am not going to work, I am going to see what sort of a house that is over there." After that almost all the annoyances came from this young man, whose name was Tom. "He began to tantalize me; he saw me, and because I was better looking than his sisters he would do everything he could to spite me. He didn't care if it was right or wrong, he would do it anyway: that's the way I heard it." The annoyances grew worse; he was going to have their window boarded up and would pay $25 if necessary; he called the two sisters "bitches" and accused them of receiving male company; he

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threatened to punch the patient if she went out into the street; but what distressed the patient most was the reference that was frequently made to her old affair with Mr. F. He said that he had heard that she went with Mr. F. and all wasn't right then. She was shocked and said to her sister: "My God! did you hear that?" In relating this to the physician on admission patient said she did not mind what was said about her half as much as she did the unjust accusations of Mr. F. who was dead: "Nobody on earth could say anything about that man; he was a good, true man!" Once on hearing one of the remarks about her and Mr. F. the patient heard another voice say, in her defense: "If it was me I would wipe the sidewalk with him!" Finally the scandal was spread so that people in the neighborhood began talking about it. One evening she overheard through the window at the front of the house the following conversation from the street at the stoop: "My gracious, did you hear what he hollered out about Miss M.?" "Which one?" "The younger one." The patient then listened intently, but all she could catch was that she was bad. Then there was a great deal of talk about the two sisters going to court to prove if all that was said was true or not.

At the Kings County Hospital the workmen across the street said: "There's Sarah, there's Sarah!"

On admission to this hospital hallucinations continued. Patients at the table said: "This is Sarah M. She owes money. She didn't pay for this and she didn't pay for that." The patient has elaborated this into a peculiar delusion; these remarks were intended for the patient's niece, Genevieve M., and not for her; somehow she was mistaken for her niece; it must be that her niece had been at this hospital some time ago, but instead of giving her own name she had assumed the patient's name. One day as she sat near the window she heard a man's voice near the window say: "Well, I'm going to see this case to the end." So she jumped up and looked out the window but did not see anyone she knew. She asked: "Who is that?" and the answer she heard was: "Somebody that's related to you." Later she heard mentioned the name of a distant relative of hers, Mr. Postil, and soon after that she met him as she was going to the sewing room and he bowed to her; she believes that he is in one of the cottages; she said: "He seemed to be a good friend through this trial; fought for us." Subsequently almost all her preoccupations seemed to assume the form of hallucinations. She heard that her sister cried after her at home; also that her sister had been here twice but was not allowed to see her; "I was real angry that I could not see her." Since then she has heard that her sister had been sent to the Central Baptists' Home and that she had died there. (Shortly before the patient was sent to the Kings County Hospital it was suggested by some of the church members that her sister be sent to the Central Baptists' Home, but they refused to be parted.) The patient has also heard that Tom, the young man who had annoyed her so at home, had died of heart failure.

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The following case, in which the psychosis was attributed to death of the patient's mother, presents a very different etiological mechanism. The patient is a girl, 17 years of age, who has served as domestic; her mother had melancholy spells and one maternal uncle was insane; as a child the patient was disobedient, wilful, very excitable, backward at school, distinctly inferior intellectually; when she was 15 years old her mother died and ever since then she has been among uncongenial surroundings; after spending two years in the Brooklyn Training School and Home for Girls, she went to work as domestic but had difficulty with employers, refused to take orders, would not stay long in any place, and finally became discouraged, said that as her mother was dead there was no use of her living, became nervous, sleepless, and was committed. Following commitment she has at times shown depression with some retardation, at other times irritability, disobedience, deliberate refusal of food to force her discharge, and tendency to become abusive.

F. K. E. Z. Case No. 7364.—Psychosis allied to manic-depressive insanity. Age 17. Admitted January 20, 1911.

Family History.—Mother learned with difficulty at school and had very little education; she is said to have been of a cheerful though erratic disposition, but following the death of her husband she suffered from melancholy spells. One maternal uncle was insane.

Personal History.—From her early childhood the patient was disobedient, wilful, and very excitable; her mother was generally very indulgent with her, but at times when she could not have her way she would cry, carry on and even strike her mother or spit in her face. When she was four years old she had measles; her two brothers who had had measles before her had recovered and were then able to go out and play; for that reason she did not like to stay in bed, disobeyed her mother and got up; she was then locked up in her room and for that she screamed so violently that, she states, for a year after she was unable to speak above a whisper.

She went to school at the age of six and continued until she was nearly 14 years; she states that she was below the average in her studies and had special difficulty with arithmetic; she was left back four or five times, though this was in part due to irregular attendance: "When I did not feel like going to school I would stay away two or three days." She got as high as the second primary grade, but after that had to be put in a special class for poor scholars. Her age level of intelligence according to the Binet-Simon scale, as determined by tests applied after her admission to the hospital, is ten years.

When the patient was about 15 years old her mother died; she states she cried and felt very badly; her cousin placed her in the Brooklyn

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Training School and Home for Girls where she found the discipline disagreeable, would often feel melancholy and had spells of crying; at the end of two years she asked her cousin to take her out of there and went to work as domestic. After three weeks in the first place her mistress tried to show her how to wash windows but the patient became angry and left "because she wanted me to do the work her way and I wanted to do it my own way." For a week she lived with her uncle and then found another place.

Psychosis.—She found the second place not more congenial than the first; she did not like the work and did not like to be ordered about; it made her feel terribly downhearted but she stood it for two months; at the end of that time she left, returned to her aunt and declared that as her mother was dead she did not care to live and was going to commit suicide. During the night she was restless, tossed about in her bed, and slept very little. On the following day her uncle took her to the Kings County Hospital. When she realized on the way where she was being taken she began to cry and later when she finally found herself in the observation ward she began to scream "Mamma!" but after her uncle left became gradually calm and made no further disturbance.

On admission to Kings Park the patient told of her difficulties with employers, was evidently depressed, and admitted having spoken of committing suicide. She stated that she seemed to have lost ambition and that it was hard for her to do any work. She said she had always been of a melancholy disposition but had felt much worse since her mother's death. She denied that her mind was affected, spoke of suicide as being a proper and rational act under certain conditions. Her orientation, memory, and grasp on surroundings were unimpaired; but her school knowledge and general experience were poor: *Q.* "100—7?" *A.* "I can't do that, I never was good in arithmetic." *Q.* "Where is Chicago?" *A.* "I don't know, I have never been there." *Q.* "Where is Albany?" *A.* "State of New York." *Q.* "On what river?" *A.* "I don't know." *Q.* "What is the largest river in the United States?" *A.* "Kansas." *Q.* "Who is the governor of this state?" *A.* "Gaynor."

Following admission she was for a time depressed, apathetic, untidy and somewhat retarded. An attempt was made to get her interested in basket making, but she gave it up on the second day. Several weeks after admission she began to grow irritable, began to rebel against the hospital routine and discipline, and asked the ward physician to let her go home; when told that she could not yet be discharged she said: "I won't eat anything and will always sit in a corner and behave so crazy that you won't be able to take care of me." She became irritable, resistive, disobedient, at times refused food, and finally had to be transferred to the disturbed service. In July, 1911, she said she wished she was dead, would welcome death any day, and asked the nurse to give her poison. She called the ward physician "crazy lunatic" for not allowing her to go home; also wrote a letter to her uncle saying that he must be the crazy one to

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have placed her here. She grew more irritable and toward October, 1911, would give no civil answer to the ward physician, but to all questions would say only, "That's none of your business."

The next case differs from those already cited in the nature of the exciting cause as well as in the type of reaction. The patient, a bright and ambitious young man, but of very neuropathic ancestry, is described as having always been shy and quiet in society, sensitive, overconscientious, and overreligious, yet very determined and given to occasional outbursts of terrible temper. At the age of 20 years there is the beginning of a love affair; three years later the patient, not being able to help support his mother and at the same time support a wife, asks his fiancée to wait two or three years, against which she protests; the patient, however, insists on postponing marriage; this is followed by increasing coolness on part of fiancée and increasing infatuation on part of patient; disinclination on part of patient to see the situation in its true light with tendency to misinterpret apparent coolness as being intended only "to try his affection" or as being due to "the girl being talked to"; repeated repulses from girl lead to new, most elaborate misinterpretations, ideas of reference, self absorption, day-dreaming; in the meantime growing inefficiency in work, errors, falling behind, apparent negligence, and finally loss of long held position. Two or three feeble attempts to secure employment, increasing apathy, aimless wandering through streets or standing around for hours in parks, on bridge, at post office; continued misinterpretations and ideas of reference, outbursts of violent anger, commitment in December, 1910; gradual deterioration of habits, tendency to collect rubbish, occasional assaults upon other patients and attendants, continued hope of marrying former fiancée.

F. A. Case No. 7280.—Dementia præcox. Age 25. Admitted December 21, 1910.

Family History.—Paternal grandfather was cranky, irritable, very penurious; drank very heavily up to the age of 30 years. Paternal grandmother is described as a "lovely woman," but her mother was a heavy drinker. Father is described as a sensitive and irritable man, thoroughly selfish and domineering; queer, cranky, suspicious; his wife states: "He was very jealous of anybody whom I cared for, my own children, my mother; many times I would say, 'Oh, he can't be right!'" Formerly he drank more or less moderately but of late he has been intemperate and

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unable for that reason to hold a position long. About fifteen years ago he became intimate with the woman cashier employed by the wholesale grocery firm of which he was a junior member, through her obtained surreptitiously money belonging to the firm, so that finally the firm was dissolved owing to failure in business and he was separated from his wife; since then he has been seldom heard from. One paternal uncle died at 30 years of consumption; he was ugly and quarrelsome, used to beat his wife, was very intemperate; he was employed by the firm of which his brother (patient's father) was a member, part of the time as bookkeeper, part of the time as driver of delivery wagon, was negligent in his work, never amounted to much.

Maternal grandfather was very bright; from the time he was 19 years old he drank to great excess until he died; was at all times rather irritable but when drunk would be extremely disagreeable. Maternal uncle living, 40 years old, truck driver, ambitionless, never got very far, drinks immoderately. Maternal aunt, bright, educated, woman physician and wife of a physician, nervous, worries easily; she herself says: "I am so nervous I can hardly hold myself together."

One brother, 17 years old, normal as a rule, but at times gets cranky, sulky, and won't speak. Two other brothers and one sister died in infancy, respectively, of meningitis (?), dysentery, and pneumonia; they all had severe convulsions before they died.

Patient was born in Brooklyn on September 25, 1885. At birth he had two deformities, hare-lip and hypospadias. For the former he was operated on in infancy with a fairly good though not wholly satisfying cosmetic result. For the latter he was operated on at the age of 24 years under circumstances to be described later on. When he was about one and one-half years old his mother was once greatly startled by finding him in a deep stupor; there were no convulsions or even twitchings; the family physician reassured the mother stating that the stupor would soon pass away, as it did after having lasted nearly a whole day. At the age of seven years patient had pneumonia complicated with delirium. Patient attended school from the age of six years and left when he was 14, when his parents were separated and he had to go to work; he had reached the third grammar grade and had been a bright scholar. He went to work for the New York Underwriters' Agency as office boy at $3.00 a week and worked himself up gradually until at the age of 23 years he was map clerk and received $1000 per year. At the same time, having an ambition to study law, patient went to evening high school and passed examination for fifteen regents' counts. Patient's disposition is described as generous; ever since he began to work he contributed almost all his earnings toward the support of the house. He was very shy and quiet in society and at the same time extremely sensitive. Mother states that he has always been overconscientious, overscrupulous, yet very determined. Though good, even said by the family physician to be "too good," he would often get into a terrible temper. Up to the age of 21 years he was strictly observant

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of all religious duties (Roman Catholic), but after that age became more than strict or punctilious; he would kneel and pray for an hour or more in the morning when he had to go to work; his mother used to remonstrate with him, although she has always herself been strictly religious, but could not prevail upon him to moderate his zeal; she used to say: "The only fault I could find with Frank is that he prays too much! He will pray himself to death."

At the age of twenty years patient met a young lady upon whom he began to call, at first casually and later regularly, with the hope of marrying her. The girl evidently welcomed his attentions as she invited him frequently, sent him Christmas and birthday presents and various remembrances, went out with him, corresponded with him, and kept company with no one else. They never became definitely engaged, yet it was clearly understood on both sides that they were ultimately to be married; their relations became intimate: they kissed when they met and when they parted but never went farther than that. The girl gave him a small rose, kept in a box, for a keepsake; it was a blessed rose which she received at the convent in which she was educated and which was to be given to "no one but the one whom she really, really loved." Thus the patient had every reason to believe in the genuineness of her affection.

In March, 1908, he talked with his mother about his plans of marriage. His mother pointed out to him that he was not yet earning enough to be able to help support her and at the same time support a wife; and it was decided that he should ask his girl to wait two or three years. The girl protested saying: "Well, Frank, I don't think it is fair to make me wait all that time!" He told his mother of the girl's objection; the mother thought the girl was selfish yet urged her son to go ahead and marry declaring that she could readily get along partly on the earnings of her other children and partly on what she could make herself. But he replied: "Mamma, I will never desert you for the best girl that ever lived."

Psychosis.—Following the disagreement between the patient and his fiancée concerning the postponement of the marriage the girl became cool toward him, began to slight him in various ways, would not be at home when he called, would not care to go out with him. The young lady's mother also seemed to be opposed to the match. The patient, however, refused to take the view that his girl no longer cared for him; he preferred to believe that she was merely "trying his affection" or that she was "being talked to"; as to the latter point, he suspected in particular a young man by the name of Thomas S. who was keeping company with his fiancée's younger sister. This young man, unlike the patient, was of a more sociable, lively disposition, if not so scrupulous about points of propriety, and both girls often preferred his company to that of the patient. The patient had many occasions to notice that his fiancée had a more frank understanding with Thomas S. than with himself; thus he developed a dislike for this young man, imagining that his finacée's change of manner toward him was due to her being told various things about him by Thomas

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S. His own affection for the girl developed into an infatuation; his mind was constantly occupied with thoughts of her and he began to annoy her with his increasing attentions; he would call her on the telephone in the office where she was employed as often as five or six times a day; she asked him many times not to do it as it caused her embarassment, but he continued in spite of having repeatedly promised to stop. Finally in May, 1909, the girl told him she was tired of him and that she did not care to see him again. Although he felt hurt to be thus "thrown over," again he would not believe that it was serious but thought that they would be separated only for a time, that sooner or later they would make up again, and that in the meantime he would have a chance to have an operation performed for his hypospadias; for ever since he began to think definitely of marriage he worried about his deformity fearing that it might cause him to be impotent or sterile. He was operated on in the latter part of July, 1909, having previously written to the girl, without, however, telling her of the nature of the operation. She called to visit him at the hospital on the second day after the operation together with her sister and Thomas S. Thus they made up and even kissed and on the evening of the same day the girl wrote him a four page letter, so that the old relations seemed to be re-established. The result of the operation was very satisfactory and in the latter part of August the patient had recovered fully and was able to return to his work.

The clerk who substituted the patient in his absence reported that he had found the work in a poor condition; the patient had fallen behind and had made many gross errors which he was not able to explain. The patient admits that after he had parted from his girl his mind was constantly preoccupied with thoughts of her so that his work suffered; he states, however, that he never allowed that to worry him, but he let his work accumulate, feeling that at the worst no serious loss could result to the company through his neglect, but that it might cause only inconvenience by necessitating an extra effort for a time on his part or on the part of other clerks to catch up where he had fallen behind. He was reprimanded and warned first in September, 1909, and again in November; although he seemed to make a feeble effort to do better he failed to improve, but seemed to become very indifferent, would hardly talk to any one, and at times would be seen standing at his desk or in the middle of the floor, apparently in deep thought. As to the relations between the patient and his girl, soon after he came out of the hospital she again became tired of his attentions, continued to slight him and repel him in various ways. The firm for which he was working wrote to his mother calling her attention to his growing inefficiency and queer conduct. The mother then realized that the matter was becoming serious and said to him: "Frank, this has to be ended one way or the other. You cannot stand it. You must either have her or give her up. She must tell you definitely." Accordingly he went to see the girl, but could get nothing definite from her. He came home in the evening, in a pouring rain, had

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a wild look, bringing with him into his mother's room his soaked and dripping umbrella which the wind had turned inside out and which he silently and absent-mindedly handed to his mother. She was startled to see him in that condition and suggested to him to go and see his priest. The priest advised him not to take things so seriously and on the following day went personally to see the young lady. She told him frankly that she could never marry Frank, but the latter, on being told that by the priest, still obstinately refused to believe it and interpreted what she said as a show of displeasure and resentment at the priest's interference. The family physician was consulted, but he said: "Frank is in love, that's all." He gave him a tonic, but the patient continued to grow worse. In January, 1910, while returning home from church together with a friend he suddenly had a fainting spell, was taken into a liquor store where he soon recovered and was then able to proceed home. In the office his work kept growing worse; he was given a month in which to find a new position; this he regarded as a hint from the head of the department to seek a promotion by transfer to another department; he actually applied to one of the members of the firm for such promotion declaring that he was competent to fill the higher position and by length of service entitled to the promotion. He states that the promotion was not given him because there were two or three other clerks who ranked above him by seniority; yet he believes that he would have been promoted if he had made use, like others, of influential backing. In March, 1910, he was given two months' pay in consideration of his long service and discharged, being at the same time advised to take at least a year's vacation. Shortly prior to his loss of position some of the employees of the firm for which he worked organized a minstrel show of which he was made treasurer. In spite of the definite breaking off of the relations between the patient and his girl he fully expected her to appear at the minstrel show together with her sister and Thomas S., and when she failed to appear he elaborated the explanation that the minstrel show had been originally planned in order to test his affection by what he would do upon the girl's failure to appear; he believed that he was expected to show his persistence by calling on the girl and expressing his regret at not having seen her there.

Following his loss of position he remained at home for five or six weeks, at the end of which time he was induced to go for a rest and change of scene to a boarding place at Lakewood, N. J. He would not remain there, but returned in a week. His condition kept growing worse. Frequently he would call at the office where he was formerly employed, saying that he had come back to work, and would stand beside the superintendent's desk for an hour at a time without attempting to enter into any conversation. He tried to call on his girl again, but she was out, and when she returned she wrote him a note demanding to know what business he had to call on her without permission; to this he replied on a postal card laconically "You are O. K."

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He made but one feeble attempt to secure a new position by filing a slovenly written, hardly legible application in an express company's office. His relatives remonstrated with him and he grew irritable and suspicious. He grew negligent in dress and habits and would become angry, saying "Don't fuss!" when his mother would attempt to brush his clothes for him or fix his neck-tie when he was about to go out. He would wander aimlessly through the streets and would be seen standing on the bridge, or at the post office, or in the park for hours at a time; he states it was as though he was "riveted to the spot." At home he would stand around day-dreaming, gazing at his girl's picture, going over her letters again and again, until his mother took them away from him. His mother urged him to become interested in some other girl, but he would not follow her advice; the explanation which he gave after admission to the hospital was as follows: "When any one has carried a matter as far as I had mine, the probability is he will want to finish it; this is aside from all sentimental reasons. In the second place I wasn't really satisfied that she had backed out. Moreover, there wasn't any other girl for whom I had any particular admiration." As time went on his conduct and manner grew queer; he watched the mails every day as though expecting to receive some important communication; would spend hours in the parlor peering under the barred window shades into the street; one evening he called at the priest's house and on being told by the housekeeper that the priest was not in he went up stairs and remained in the room until eleven o'clock in the evening with no lights on, and was then sent home by the pastor of the church who returned at that time.

He was now misinterpreting in a most far-fetched manner everything that came to his attention. He often thought newspaper cartoons referred to him; in particular one is mentioned in which was depicted a fictitious person, Mr. Cadman; Mr. Cadman, he felt sure, represented him; the first syllable "cad" signifies one who has "thrown over" a girl. When anyone related a story or incident in the patient's presence he was apt to find in it an allusion to himself; thus someone told of a young man who broke a baseball bat and after some discussion was persuaded to pay for it; the patient thought that this was doubtless told for the purpose of testing his mind; it was to get him to say how he would have acted under similar conditions.

By this time everybody practically realized that his mind was seriously affected. His mother took him to a specialist in nervous diseases who examined him thoroughly and questioned him, among other things, about his sexual life. Patient told him that he had been sexually continent as far as relations with women were concerned; he admitted having masturbated occasionally though he denied ever having done it to excess or having become regularly addicted to it. The physician expressed to the patient and to his mother the opinion that the trouble was due to sexual continence implying, as it seemed, that if the patient were not so overscrupulous about sexual morality he would not be so nervous. The patient

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became indignant and said he would never follow the advice hinted at by the specialist.

By degrees he seemed to develop vague ideas of persecution directed partly against Thomas S., the young man already mentioned, and partly against his own brothers. One day he returned home wildly raging about Thomas S. "I have it in for him! I'll get square with him!" It was feared that he might become dangerous. At home he became surly, irritable, and suspicious; he thought they were all the time "guying" him; chance remarks or movements, he imagined, had reference to him; often at the table when someone reached for something or made any gesture he would suddenly jump up and say: "There you go again!" and begin walking up and down the room in an excited manner.

One evening in December, 1910, the patient's brother, who was employed by the Seth Thomas Clock Co., brought home a clock which had been repaired and which he was to deliver to the owner on the following morning. He placed it on the mantelpiece alongside of an old alarm clock that was there. This irritated the patient intensely; the name of the clock (Seth Thomas) suggested that of his hated enemy, Thomas S., "no doubt he had a hand in the matter." Then he recalled that once in speaking to his girl of his ambitions he said his idea was "to aim high" and that Thomas S. suggested that he had better "be low"; "low" in this remark, he thought, had reference to Seth Low, the former mayor of New York, the idea being that he had better aim to be mayor of New York as that was the highest ambition that a resident of New York could have; he believed, however, that this remark was not sincere but offered as irony in derision of his preposterous ambition. The name of the clock had, no doubt, a reference to this disagreeable pleasantry (*Seth* Thomas—*Seth* Low). He felt sure that the clock was brought to annoy him and to "guy" him; in fact the mere circumstance of his brother's holding a position in the Seth Thomas Clock Company was not without evil significance. But all this he would have allowed to pass unnoticed if it were not for another circumstance, namely, that the new clock and the old clock which stood alongside of it did not indicate the same time; this was arranged purposely as a test to see what he would do about it. It was more than he could endure. Without the least warning he seized the new clock intending to smash it; his two brothers and his mother quickly caught hold of him and after a struggle finally succeeded in taking the clock away from him; thereupon he seized the old alarm clock and before he could be prevented, ran out with it, smashed it, and threw it into the ash can. Several days after that he was taken to the Kings County Hospital and from there committed.

On admission the physical examination revealed slightly exaggerated knee-jerks, scars and slight deformities at the sites of old operations for hare-lip and hypospadias, otherwise nothing abnormal.

Mentally he was quiet, composed, submitted to the hospital routine and cooperated in the examination. He showed no disturbance of the flow of thought, no impairment of memory or orientation; he said he was

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brought here because he was supposed to be insane but that the real trouble was "a nervous breakdown and a conspiracy. I attribute it all to a serious attachment to a young lady." "It got the best of me to the effect that I couldn't do my work and was asked to resign; at that time I was attending to business as best I could and also was attending evening school to prepare myself for doing better in life." Unless approached and questioned he had very little to say, was rather seclusive, self-absorbed, and indifferent. He spent his time standing around or sitting by himself doing nothing at all. Several attempts have been made to get him to do some work, but while he would occasionally make a weak effort he proved useless as a worker. Occasionally he played a game of checkers with some fellow patient but as a rule took no interest in amusements of any kind. In February, 1911, he assaulted an attendant, loosening some of his teeth, because the latter urged him to hurry while he was kneeling in prayer in the morning and detaining everybody when it was time for breakfast. He was at other times very irritable, obstinate, and refused to obey orders and to adapt himself to the hospital discipline. In the summer of 1911 he began making assaults upon other patients without apparent provocation, saying in explanation only that they did not mind their own business and looked at him in a way he did not like. He began also collecting nails, rubbish, buttons, etc. When interviewed in October, 1911, he had bits of pasteboard from a cigarette box which he had torn up; these he had in all pockets; each fragment of paper had a printed letter on it; when asked about them he said he would give them up if wanted, as they were of no special importance, though, he added, they might be of "fraternal significance," explaining later that he was referring to the Order of Knights of Columbus of which he was a member. At about that time when asked as to his attitude in relation to his love affair, he said: "Conditions are now the same as they were before, but I can preserve a more even state of mind than I could before. I still hope to marry her some time, it may not be before two or three years from now. But I can honestly and truly say that if I don't marry her I shan't marry anyone else, because I could not transfer my affection to anyone else and give the amount of affection that I consider proper."

In the case next to be cited the conditions which brought about the psychosis were truly formidable. The patient, a young woman, of excitable, emotional, and rather unstable stock, described as cranky, hot-tempered, and stubborn in disposition, becomes involved in a love affair followed by an engagement at the age of 23 years. During the engagement period she reluctantly permits her fiancé to have sexual relations with her and during the same period she discovers in him disagreeable and repulsive traits, but at the end of a year marries him in spite of her repulsion, feeling that it is "too late to back out." Her married life

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Sexually the patient is said to have been very passionate. She desired children, but the husband did not, and she was deprived of sexual gratification owing to precautions taken to avoid impregnation. The patient once stated to a friend: "He is not living with me as man and wife."

In relating her history to the physician the patient intimated repeatedly that she had in her make-up a pride which resented her husband's jealousy, and his inconsiderate attitude towards her, which prevented her from "petting" him and from obeying his demand that she stay at home at all times. Thus it happened that he often came home at unusual times and found her out or dressed and prepared to go out. He became by degrees dissatisfied with her disobedience, and finally one day, about a year after their marriage, after a quarrel which they had on account of her going out to visit her folks, told her that he would pack his valise, and if she opened the door he would leave her. He had supposed that she would not "open the door" but on the contrary would beg him to stay. She, however, was wrought up, grieved and resentful; she could not bring herself to stoop to beg him to stay and "on his dare" she did open the door. He was evidently disappointed, hesitated, but finally left. For a week, she suffered much, was depressed, partly blaming herself for what had happened, partly feeling unhappy over being treated by him so unjustly. At the end of that time, her "pride was broken" and she went to his place of business to beg him to come home. He was glad enough to see her, deriving particular satisfaction from having triumphed over her. He went back with her, and they decided to rent the upper floor of the house of her parents.

There they lived about two years. During that time the unfriendly feeling between her husband and her relations grew much worse. He seemed to take much pleasure in "running them down" and in "running down" all her friends. This hurt her feelings very much.

Once while her husband was visiting some neighbors living on the opposite side of the street, the patient without knowing that he was there, went over to call; as she entered she found her husband playing cards for money with two friends of his. He was much upset by being thus surprised. Later on, neighbors who knew that he gambled frequently and at the same time failed to supply his wife with money for her needs, and even failed to pay the rent due her parents, told her people about it; that further increased the ill-feeling between her folks and her husband; all that time he was suspecting that it was his wife who was complaining to her people about his gambling. He began to insist again upon their moving away and living apart from them. This time the patient obstinately refused. He offered to take upon himself all the labor of packing and moving, but she still refused. He threatened to leave her, but she remained firm. He then left again, though with evident reluctance. This occurred on Christmas Eve, in 1910, exactly three years after their marriage. It was then, according to the patient's own statement, that the onset of her breakdown took place.

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When her husband left the patient broke out in tears and in despair told her mother what had happened. Her mother tried to console her saying that he would probably return in a little while. The patient felt somewhat reassured, as she too did not think that he had really left for good. Days went by, however, and he failed to return. She became greatly depressed and discouraged, blamed herself for a great deal, could not sleep, and ate very poorly. When he first left her, about two years previously, she felt it was such a disgrace that she would tell nothing about it to any of her friends, explaining his absence by saying that he went away for a week on business. The second time, however, as time went on and he did not come back, she began to imagine that her friends and neighbors and even strangers knew about her being deserted and talked about her. Finally she states her spirit was completely broken, and about six weeks after he left her she again went to his place of business to beg him to return. Again he was glad to see her and glad to have triumphed over her pride, yet he refused to return. This, as she relates it, stung her more than anything else that he had done. She got into a nervous state so that she hardly knew what she was doing and hardly knew what was going on about her. By that time, she says, "I was already crazy." She then, partly of her own accord, partly at the urging of her folks, continued to call at his place of business almost every day, to beg him to return to her. He paid no attention, treated her without consideration, while her condition kept getting more and more miserable. She states that not only he but even strangers where he worked could see what a wreck had been made of her. Finally the patient's mother and brother called on him; he yielded to their entreaties and returned.

The patient states that she was for the moment happy, yet her happiness even then was not unmixed with bitterness. She was deeply pained by the injustice of it all; by his refusing to come back when she begged him, and by yielding, only to demonstrate his charity, to the entreaties of her parents. She felt, moreover, that her general condition had gone so far in its downward progress that a complete breakdown was inevitable. Physically she had failed terribly, having lost about 25 pounds from her usual weight. She was so sensitive, irritable, even ugly that she says, "there was no living with me." The husband made no allowances for her condition but grew quite tired of her, intimated frequently that he would like to be rid of her, and even suggested that she put herself out of the way by taking gas or by drowning. She had frequent tantrums; at times taking the view that her troubles were mainly due to the interference of her family, she would say, "I hate them, I can't bear them, I can't look at them." At other times she would say: "Oh, God, I don't want to live!"

She then began to imagine things. She thought that people were coming around to find out news that could be used by her husband to obtain a divorce. Everything that occurred aroused her fears and suspicions, seemed to have a queer significance. Thus she went with her husband to a moving picture show; there she was rather shocked by the representa-

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tion of an attempted abduction of a young girl; she thought as this show was going on that her husband looked at her in a queer way which distressed her; she thought also it was strange that the manager of the moving picture show sat next to her husband during the performance. Later on her mind dwelt on this; she imagined her husband was manager of the picture show, and she thought that there were people around taking snap shots of her and of everything that was going on in their house for moving pictures. She was annoyed by automobiles that passed by the house. As she looked out the window and saw women pass by with their baby carriages she would have a keen realization of her own unhappiness which was thus emphasized by contrast. She heard voices but cannot recall what they said. She laughed and sang at times; this she said she did merely with the hope that she might forget her troubles, be able to go out and have some diversion, and become like her former self again. The history states further that she said once that her husband was to be President of the United States. She recalls having said that, but can give no other explanation than that she was out of her head and did not know what she was talking about.

She grew more desperate; the idea of committing suicide kept recurring, especially after her husband suggested it, and while she fought it off she finally, with her mind confused and distracted, began making attempts by turning on the gas in the room. Each time, however, somebody in the house would discover the odor of gas and come up and prevent her from accomplishing her object. Her persistence finally led to her being taken to the Kings County Hospital. There she remained several days during which time her husband visited her once, when he again intimated that he wished to be rid of her, and that he would seek a divorce. She seemed, however, to improve somewhat and at the request of her relatives she was discharged and taken to live at the house of her cousin. She was out six weeks, remained deeply depressed, brooded over her misfortune. Her husband called on her occasionally, but finally one morning he left the house of her parents, where he had continued to live, saying he was going on the road for the firm. It was found, however, that he did not go on the road, but that he simply left again to go to live in New York. On the same day she again had to be taken to the Kings County Hospital, and was from there committed to Kings Park.

On admission patient was quiet, evidently depressed, offered no active resistance but cooperated very poorly in the mental examination. She answered questions slowly, with reluctance, and in a rather listless manner. She had to be urged to speak and often would make no reply at all. She said she had forgotten about her trouble, but admitted that she thought that no one cared for her, and her friends slighted her. She complained of insomnia. Physically she was evidently somewhat run down; weighed 115 pounds; her usual weight being 130 pounds. She had frequent crying spells; she never thought she would land in a place like this. During the first two or three months following her admission her condition improved

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slightly, as her listlessness and bewilderment disappeared. She co-operated better in mental examinations and was found to be well oriented; showed a normal grasp of her surroundings and good memory for recent and remote occurrences. She continued, however, to have crying spells and even tantrums of agitation, said she wanted to die, etc. From time to time she would express delusional ideas which were, however, rather in the shape of suspicions or conjectures, and not well established delusions. Thus she thought that her husband had been the cause of insanity, not in her case alone, but also in those of some other patients here. She thought also that he had people here spying on her in order that they might obtain evidence for a suit of divorce. She believed that many people here knew of her disgrace and humiliation, and that they talked about her. At one time she expressed the idea that her sister and parents wanted to be rid of her as she had caused them so much trouble.

She improved, however, gradually. In the latter part of September, 1911, she weighed 135 pounds. She was more composed mentally and more rational. She now (October, 1911) employs herself in making baskets.

In November, 1911, though not yet recovered completely, she was discharged into the custody of her relatives at their request. Some weeks following her discharge she wrote a letter to the hospital stating that she was again living with her husband and that she was feeling entirely well.

§ 4. Cases Without Assigned Causes.

When some striking occurrence in the environment of a patient is followed by a mental upset it is not apt to be overlooked by relatives or friends but is rather likely to be mentioned as a cause even when an etiological relationship is not quite apparent. On the other hand, when an unfavorable environment insidiously undermines a subject's power of adjustment and thus gradually, without sudden catastrophe, leads to the development of a psychosis its significance is seldom fully appreciated, so that in anamneses furnished by lay informants, as they generally are, no cause is assigned.

The cases cited in the preceding section illustrate that where it is alleged that "the cause" is known that cause is but one event, perhaps a more or less spectacular one, of a continuous series.

When a detailed study is made of cases in which no causes are assigned it is found that the mechanism of their development is essentially similar to that of the cases with a spectacular etiology and that their morbid manifestations are no less intimately related to environmental happenings. Two such cases will be cited for illustration.

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The first case is that of a woman past middle age, of very neuropathic stock, who has been "a nervous invalid" all her life and had attacks of hysteria. She began having love affairs at an early age. From her own narration of her life it would seem that but little ever occupied her mind besides the topics of marriages, engagements, sexual matters, love intrigues. Yet she was never married and saw no way of escape from unpleasant home surroundings. Finally following her election as church deaconess she elaborates an imaginary love affair alleging persisent courtship on the part of a recently widowed deacon. With remarkable wealth of detail she gives a complicated account of the affair based partly on misinterpreted occurrences, partly on overheard remarks, and possibly to some extent on hallucinations. The affair lasts something over a couple of years, but of course ends in nothing but loss of her position as deaconess in the church. In the end she gradually developed the idea that since the death of her mother her father has been over-passionate, has become attracted to her and has even made indecent demonstrations of his passion in her presence; this leads to her commitment.

H. D. F. CASE No. 8056.—Paranoic condition. Age 55. Admitted September 13, 1911.

Family History.—Paternal grandmother was very talkative, rather nervous. Father very nervous, hot tempered, "would go off like a rocket over anything," at times intemperate. Paternal uncle was irritable, indolent, criminal. One paternal aunt was slightly nervous. Maternal grandmother had spells of extreme irritability, at other times was very despondent. One maternal uncle, though himself normal, had a very alcoholic son. One maternal aunt was nervous, melancholy, and died insane; one of her sons is alcoholic, another is insane. Another maternal aunt was rather inclined to brood; one of her sons was insane, another committed suicide. A third maternal aunt died in convulsions following childbirth; she had been normal mentally, but toward the last her mind wandered. One brother drank to excess, suspected suicide. Another brother left home at the age of 15 years, gambled, drank, was in institutions for inebriates three times. A third brother is insane. One sister is somewhat nervous, irritable, unduly inclined to worry.

Personal History.—Patient was born in Wisconsin February 18, 1856. She went to school at the age of six and continued until 15, got along well in her studies. From her earliest childhood she has been exceedingly nervous. At the age of six years she was taken to a Sunday school Christmas entertainment where a representation of Santa Claus driving reindeer was given; she was so frightened that she began to scream, the

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performance had to be interrupted, and it took a long time to calm her. At the age of 15 years she was taken out of school as she had become nervous and "a complete breakdown" was feared by the family physician; she was inactive, seemed to lack interest, could not apply herself to her studies, when she tried to practice music she tired very soon and could not go on. At the age of 21 years she had a hysterical attack when she cried and screamed and the physician had to be called in. All her life she has been "a nervous invalid"; she could not be restful or apply herself to anything, suffered from insomnia, was very weak and tired easily: "If I went to church and then tried to go to Sunday school I could not take in what was going on; if I tried to sweep a room I would have to lie down two or three times while I was sweeping."

In childhood the patient had diphtheria, measles, and scarlet fever, and recovered fully from all. Her menstruation during the early years was extremely painful and accompanied by headaches: "I suffered so much that I beat the bed and almost went into convulsions." In later years it became less painful. At the age of 40 years the uterus and adnexa were removed for fibroid tumors.

The patient evidently began quite early to have love affairs. When she was 14 years old she went to a May party where she met a boy about two years her junior: "It was a case of love at first sight"; they began going together and when he wrote to her he always signed himself "Your lover"; the patient states that it was understood by all that they were practically engaged to be married, but that seven years after she first met him he surprised everybody and especially her by announcing his marriage to another. During the time that she kept company with him her brother proposed to her to have sexual relations saying that there could be no harm in it since she was soon to be married. On another occasion her brother tried to get her to go into a barn where a lot of boys and girls were together, but she refused and went home. Another love affair was with a Mr. P., the brother of a girl friend of hers who was in the same Bible class; years after they first met both families moved to Chicago; the patient was nearly 40 years old then; the patient states that he called but that she would not come down to see him as she was too sick; she states, however, that on the families' return to the east he continued to offer his attentions: "Later followed an engagement. I refused a ring as the engagement was to be broken, at my suggestion, should my health not improve. My letters could not have been very cordial because of lack of improvement. Finally I received notice of his marriage." His married life, the patient states, was unhappy: "I realized that he still loved me." These love affairs are here given as related by the patient; in speaking of them as well as of the last one which caused her psychosis (see below) she tried to create the impression of being an unwilling or at least an indifferent object of love and of having many times successfully resisted marriage. Her mind is largely preoccupied with her love affairs and sexual matters and the above account is given not as authentic records of fact, but rather as an illustration of the nature of her personality.

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The patient has all her life taken an active part in Sunday school work, church affairs, etc., and in 1907 she was made deaconess in the church of which she was a member.

The patient states that the conditions at home were always unpleasant to an extreme degree. Her father was brutal, often whipped the children, and as they grew older he would have the older ones hold the younger ones as he whipped them. There was perpetual scolding and quarreling which grated disagreeably on the patient and she was most unhappy in the thought that "there seemed to be no escape from it all."

Psychosis.—In January, 1908, shortly after the patient had been made deaconess of the church, there was a meeting of the standing committee; there the patient, standing about 15 feet away from the pastor who was talking to one of the deacons, ("A widower, a very nice man, nothing objectionable to the man at all!") overheard the pastor say "Marry, marry!" The deacon (Mr. B.) asked "Whom?" Then the pastor pointed in the direction of the patient over his shoulder, adding "She is . . . ." The remainder of his remarks was whispered and the patient could not hear it, but she feels certain that it must have been her age, for Mr. B. seemed to be dumbfounded, as the patient looked so young for her age. Then she heard the pastor say "Her father . . . ." and again she failed to catch the rest of the sentence, but states that it was surely some reference to her father's good financial position and to the fact that he was quite old. She then noticed an expression of deep regret on Mr. B.'s face who, she felt, was under the impression that owing to her father's age and feeble condition the patient could not marry as she had to take care of him. The pastor, however, exclaimed: "She can, she can!"—meaning that she could marry anyway as her sister was at home and could very well care for her father. Thereupon Mr. B. seemed much pleased and the pastor said: "At the social next Thursday." The last remark the patient interpreted as a suggestion to Mr. B. to seek her acquaintanceship at the social gathering to be given by the church on the following Thursday. At the social the patient noticed that Mr. B. stood not far from her and kept watching her, but she ignored him. At one of the subsequent meetings of the standing committee Mr. B. came and sat next to her. Some time after that he called at the house, ostensibly to invite her father to a church social; she let him into the parlor; the portieres between the parlor and the adjoining bedroom had been pushed aside; Mr. B. nodded toward the bedroom where the bed stood with the coverings thrown back, the patient's father having just risen from his nap; patient says: "It was plain enough what he meant, but just at that moment father came in." Later on, the patient states, Mr. B. offered to marry her; this she heard indirectly, the rumor having probably started from the pastor who no doubt got it from Mr. B. himself. The patient states that she was opposed to marriage and that having noticed coolness on the part of Mr. B.'s daughters toward her she called upon them to assure them that whatever rumors they may have heard about the proposed marriage of their father to her there was no truth in them as the marriage was not

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to be. She felt at one time so indignant at the pastor for his suggestion that she was almost ready to go to him and demand an explanation for his placing her in such an embarassing position. She, however, did not do it, as she realized that from his own point of view the pastor was more or less justified: as she was a deaconess and had come into many relations with people socially he thought that something ought to be done, that is to say, that she ought to marry and have a household. The patient felt also that an injustice was done her by Mr. B. who should not have encouraged her by sitting next to her and showing her many other attentions when their marriage was not to be; the church authorities evidently felt the same way about the matter as Mr. B. "was made to stand in the aisle at the church and bow to me very profusely; that was his apology to me before the entire congregation! There are ways of discipline that they have in the church which I know nothing about. He was as white as a sheet, and I was very sorry for him."

The patient dwelt upon this affair with Mr. B. in her conversations with people and finally, in the same year, had to give up her post as deaconess of the church, though she states that she withdrew of her own accord; in response to vague criticisms she felt herself called upon to declare: "My life in this church as elsewhere has been pure and Christ-like!"

Some months after her mother died the patient began to assist her father in his office by attending to telephone calls. Once her father becoming angry for a trifle spoke very crossly to her in the presence of a customer; immediately, however, he became sorry and remarked, "She needs help." This remark, though hardly noticed by the patient at the time, she understood later, in the light of new developments, to refer to her sexual wants. She observed that her father took special notice of the way she helped him on with his coat and finally she began to suspect that, her mother having died, her father was sexually attracted to her; her suspicion was increased when she noticed that Mr. D. who had rented desk room in the same office no longer came regularly but often stayed away so that she and her father were often alone in the office. Mr. D. even told her that he had a desk at his home so that he would not have to spend so much time in the office; he made a motion with his head toward the towels at the toilet bowl saying something about his not using them much. Then her father began to refer significantly to Mr. D.'s being away so great a part of the time. One day her father came home with a letter; he sat close to her and leaned over her with the open letter in his hand and said: "See, see, this is the way the women write to me." The patient did not read what was in the letter, but her father's manner struck her as being very extraordinary: "I thought the worst had come and that father was under full swing in the wrong way." Occasionally he brought home some flowers and once insisted on the patient's wearing them when she went out, saying, "You can tell them I was your beau." Lately her father, having grown quite old, has required a good deal of personal care; several times as she combed his hair he would say: "Don't stand so close,

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don't stand so close, I can't stand it!" Matters kept growing worse; as she came into his room in the morning he would work his abdomen up and down in an indecently suggestive manner; she said: "Father you must control yourself if I am to wait on you," but he said he could not help it and when she wanted to leave him he said she need not stay away. "I said, well, father, if it is as bad as that you had better see a doctor! I realized he was passionate or going to the bad quickly. I noted his peculiar carriage and his pronounced bloated abdomen, which I had supposed was old age corpulency, but he seemed anxious and finally held himself so that I was bound to see his bloated condition." These ideas finally led to patient's commitment.

On admission the patient told her story as above; she was very loquacious and freely communicative; she talked almost exclusively about her sexual experiences and love affairs, old and recent, with obvious falsifications, referring the origin of them all to others and affecting an attitude of one who has been against her will drawn into these affairs and has been thereby needlessly injured. Nothing but her peculiar version of these experiences could be obtained from her, as whenever questioned as to the actual facts of her sexual life she persistently maintained that her life had been pure and free from all such thoughts. Her language is perfectly coherent and natural in every respect, excepting that in referring to sexual topics she makes use of veiled symbolic expressions: "personal contact" is sexual intercouse, "going to the bad" is being in a state of sexual excitement, "to need help" is to have a craving for sexual intercourse with danger to health in the absence of gratification; among the manifestations of sexual craving she frequently refers to "bloating of the abdomen," "peculiar carriage," and "bearing down, both rectal and abdominal," apparently with no fear of being misunderstood. She speaks of sexual experiences, aside from "personal contact" or actual intercourse, as being often brought about by "mental influence"; in this way a man can ruin a woman's health by causing "bloating," "bearing down," etc. Such influences have been produced upon her by her father, her brother, and other persons.

In speaking of the affair at the barn which occurred when she was a girl (see personal history) she states that her brother had wrongly claimed that she "had done wrong" with one of the boys; she states also that when she was first engaged and her brother proposed to have "personal contact" with her, saying that they would not be found out and that there could be no harm from it as she was soon to be married, she did not consent but that he then exerted upon her a "mental influence" which caused her to become a nervous invalid. She states that years later he suffered from trouble with his eyes which resulted from a fall from a hay loft, but that he told her not very long ago that "he deliberately threw himself so that he would be injured, because he was worried over a childhood misdemeanor for which he had, to his mother, given me the blame; he saw me breaking down, saw that I was getting sympathy from all around, and feared that he would get found out." He asked her for

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forgiveness and she replied: "Yes, I forgive you; it was a matter of childhood and I do not believe in thinking too much of sins of childhood."

With reference to her operation for fibroid tumors performed about fifteen years ago patient states: "During the spring of 1911 I learned from a conversation between Mrs. H. and her sister (old acquaintances) that while under anaesthetic for removal of womb, ovaries, and fibroid tumors conditions were found needing help; Dr. A. E. D., the operating surgeon, with three other doctors present had personal contact with me, the other two positively refusing, stating that they did not believe in such means; no other treatment was given to right this matter."

Patient is somewhat hypochondriacal, complains of being so tired that she is hardly able to push herself along, "the feet at one time winding about each other," that she has become "irritably nervous over noisy conversation, noise of piano, constant orders cried out in the hall; head too heavy for the shoulders, knees feel as if they have taken cocaine, spine aches, boring in the head; a little bleeding at the mouth of the rectum when too constipated; yellow discharge sometimes on skirt; annoying itching seemingly inside of vaginal lids, some white watery discharge," etc.

The second case to be cited in this connection is that of a woman 55 years of age, whose family history is not known and who is evidently somewhat inferior intellectually. Her life history reveals evidence of abnormally active sexual yearnings with but rare opportunity for gratification and with resulting sexual hypochondriasis; personality characterized by almost constant preoccupation with sexual matters, notion of personal attractiveness in spite of senile appearance, with protestations of modesty and desire to keep aloof from men. Following employment as housekeeper for a young unmarried physician she quickly develops the idea that her employer is making sexual advances to her, giving her drugs to excite her passions, finally accusing him openly; she is thereupon discharged from her position, but continues to annoy her former employer, threatens to kill him, and is committed.

M. A. V. Case No. 8114.—Paranoic condition. Age 55. Admitted October 4, 1911.

Family History.—Unascertained.

Personal History.—Patient states that she went to school from the age of six to that of 13 years and that she was "bright in everything but writing," yet she is unable to tell in what grade she was, can write but little, and spells very poorly ("Electrecty" for electricity) and is unable to perform correctly such calculations as 7×8, 8×9, $21 - 9$, etc.; age

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level of intelligence according to Binet-Simon scale is 11 years. When she was about 13 years old her mother died; she then left school and found employment at needlework and about a year and a half later went to work as domestic. Her employer was interested in a man about fifteen years older than she was, and when she was but little over 15 years of age it was arranged that she should marry him. She states: "I had nothing to say about it. I did not care for him. They thought I would make him a good wife and they fixed up the match." Later she found out that shortly before she met him he had been insane, a patient at Ward's Island. Her life with him was unhappy in every respect. His personal characteristics were disagreeable to her, he was dull, forgetful, apathetic, untidy, would go to his work as painter in the best clothes he had, would litter up the house with his things; he never kept his promises on account of his general carelessness. He was never able to earn enough money to support the household so that the patient was compelled to work at all times as seamstress, except during her confinements or when disabled by sickness. But the patient's greatest disappointment was in him as a mate sexually: "He was a weak man, had no virile power; in that way he annoyed me. Of course, the Scriptures say, 'Husbands, defraud not your wives!' He was always pale and weak. I suppose that affected my health; doctors considered it did. Children were born, but that was almost accident, it did not amount to a row of pins; I paid very dear for the music, I tell you. He knew, he was conscious of his weakness as a husband and he was very kind to me as a result. It made me very irritable, I was going to leave him a few times, I couldn't stand it. I told him to take medicine for his weakness, because I knew half the women were driven to distraction through that, but he would not take it. We finally decided to sleep in separate apartments." After they had been married 17 years he became violently insane, was committed to the Kings County Lunatic Asylum, and there died three years later following an operation for strangulated hernia.

About three years after her marriage the patient began going to gynecological dispensaries, in one of which she met a Dr. T. who later began to give her local treatment at his house once a week except during the menstrual periods, "for pain in the back, pain in the side, and painful menstruation." "He insisted I should come to him often to keep up the treatment; he did not care about the money, he never sent me a bill; but I saved money—even wouldn't buy shoes, and would bring him $5.00 every now and then." "He was a fine physician and a Christian gentleman!" "He fitted me to face the world and work for a living without the protection of a husband." She stopped going to this physician some time after she became pregnant with her third child.

Shortly after the death of her husband the patient went to the Kings County Hospital where she applied for admission, again complaining of gynecological trouble. There a digital examination was made by two young physicians, Dr. G. and Dr. H. "They saw the condition I was in and they thought I was a prize." After that Dr. G. gave her medicine

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which made her worse by exciting her sexually. Some months later Dr. H. assaulted her and expelled her from his office when she came to demand the payment of some money which he owed her.

Several years later the patient obtained employment as attendant at the Kings County Hospital where she met a Dr. C. for whom she subsequenly did private nursing. "He noticed I wasn't well and told me to come to his office to get treatment." The treatment which, this time, was "for hardening of the neck of the womb," was the same as that previously given by Dr. T. and was continued for a year. "At the end of that time I was well enough to go about my work without suffering, but I know the trouble is there yet." "The doctor told me not to mind about the fees. He was a good man, a good doctor!"

It is difficult to see what was the indication at any time in the case of the patient for such prolonged gynecological "treatments" as she states she had received; gynecological examination made on admission to this hospital revealed nothing abnormal. On the other hand her strong sexual yearnings, her peculiar notions about the danger to be apprehended from lack of gratification, the insistence of physicians on giving her regular office treatment without compensation, her grateful and loyal praise of them would all seem to lead to a suspicion of illicit sexual relations; on this point, however, it has been impossible to obtain from the patient a frank statement; she avoids discussing it, although on other topics she is freely communicative. In fact her disinclination to speak frankly of her sexual experiences had led some years ago to her changing from the Catholic to the Presbyterian faith to avoid having to go to confession.

In her description of her own make-up the patient shows considerable conceit, much of the ever present sexual trend, and a pretension of wishing to keep aloof from men. "I am a Capricorn woman, born under that planet; soft-hearted, benevolent, just; I want the truth; if you wrong me I'll forgive you if you are sorry; I do no wrong if I know it; I am a woman of good understanding, sound judgment." "I was a beautiful girl when I was a child; so everybody said, a sweet, lovely girl, beautiful ringlets, rosy cheeks. But I don't care for the gentlemen; am distant with them; have been so from a child; but they like me all right; men always like me, place much confidence in me." In spite of her senile appearance the patient believes that she is "a well preserved and attractive woman" and that she is still greatly admired by men; in general she believes that it is not uncommon for men to be attracted and sexually excited by elderly women: "I have heard that there are more old ladies in bad houses than others."

With reference to her unhappy life with her husband she states: "It made me hate men; well, I don't hate them, that would be silly; but I keep aloof! Let some other woman fill the gap."

In matters other than sexual she is almost equally apt to form misinterpretations and to develop delusions; thus following some altercation she had had with her son some years ago she noticed that the tea which she had at his house "tasted like tobacco" and made her "deathly sick" and concluded that he had tried to poison her.

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Psychosis.—On June 6, 1911, the patient was employed as housekeeper for Dr. S. of Brooklyn; his mother and sister who had kept house for him up to that time were about to leave to go south. Although there were several other candidates for the position, the patient was selected partly on account of her being recommended as industrious and efficient in her work and partly on account of the desirability of having an elderly woman in the position. Thus on June 10 the mother and sister of Dr. S. left and the patient remained to live alone with the doctor. Soon she began to complain of feeling nervous and weak and asked Dr. S. for a tonic; she was given gentian compound tablets; a few days later she declared that the tablets had had a bad effect on her, that she was burning up and that she could not even sleep and demanded to be given "an honest medicine" that would counteract the effect of the first. Dr. S. then gave her tincture of nux vomica and sodium bromide; this she said made her feel still worse, so that she was again burning up. She then accused Dr. S. of annoying her by following her around the room with his eyes. Soon after, while she was alone in the room with the doctor, she suddenly dropped to her knees and threw her arms around him; after that she accused him of giving her medicine to get the power of love from her and then spurning her. She was promptly discharged but continued to annoy the physician, made threats to kill him, and was finally committed.

On admission to the hospital the patient gave her side of the story which is as follows: She told of her employment by Dr. S. who "appeared to be a perfect gentleman"; she found out, however, that he was a man who was "entirely unable to control himself in the presence of a woman: that's exactly my definition of him." "He was not a pure man, he was not a good man." She knew from what she saw of his bed sheets that he must have had some disease. Shortly after she was employed there, after Dr. S.'s mother and sister left, the patient felt nervous and weak and asked the doctor for a tonic; he gave her fourteen tablets which instead of giving her relief had a bad effect on her: "I don't like to say it but it made me want to be with men, and by the time the fourteen tablets were taken the feeling was gradually creeping up and I began to get weak in my ankles and knees, and my wrists were so weak I couldn't hold things." "I told him he must give me some honest medicine to counteract the effect they had on me." The second medicine which he gave her proved even worse than the first; she was burning up, could not sleep, and sat up in agony all night; all this was done intentionally and in the meantime Dr. S. "was very affectionate to me, but I would not have it; he was always making love to me and standing close to me. One day I was changing my waist in my bedroom and I could not get it on in time before he came to the door; I reached for a towel to put over me, and he stood in the doorway with both his hands in his pockets, but I would not look below his waist, yet I could see everything. He was giving me some orders about lunch and about answering the telephone, but I hardly knew what he was talking about." "Another morning he went through the hall with just his knee pants on and he said good morning to me; he needn't

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have said that!" One evening a lady came to consult Dr. S. and remained in the office with him a long time; then the patient heard the doctor letting her out and when he came into the dining room he said: "She has got what she wants." But the patient noticed "by the condition he was in" that he did not get what he wanted: "She has a husband. I could have said that, but I ignored him." One evening Dr. S. returned home "in a bursting passion; I saw what was the matter with him, his eyes were jumping out of his head. I understood! I saw everything, but I pretended not to see it. That night he did not say good night and the next morning at breakfast he was rather glum, but I left him and went to the back of the flat. He was piqued because I left him and he said: 'You are almost as bad as I am!' because he had put me in as bad a condition as he was in himself; but I did not reply to him." Patient further relates that she once prepared a pitcher of iced tea for Dr. S. and left it on the sideboard after pouring him out a glass of it; as she came in to remove the dishes she noticed that he had been at the sideboard for something and was returning to his seat; at that time she suspected nothing, but on drinking a glass of the iced tea out of the pitcher she again noticed that her sexual passion was greatly excited; she then examined the iced tea in the pitcher and found on stirring it that it had a fine brown dust-like powder in it which she had no doubt was put in by Dr. S. on purpose. The final incident which resulted in her leaving the place she relates as follows: "I was standing in the office when he came in suffused with passion, and he wanted to grab me but I ran from the office; I knew what men were and I got right away; the next morning he did not speak to me. After that I told him we had better part as he was not treating me right."

The patient denies having ever actually threatened to kill Dr. S., but states that she said many times that a man who conducts himself as he did deserves to be killed and that she is still of that opinion.

§ 5. Summary.

The material of this study consists of 1056 consecutive admissions to the Kings Park State Hospital.

279 cases of imbecility, epilepsy, alcoholic psychoses, general paresis, and other organic conditions are excluded from the study, leaving 777 cases.

In 66.9 per cent of these cases no cause has been assigned and in 4 per cent conditions have been erroneously assigned as causes: *in more than half of the cases indications for commitment have arisen in the midst of an average environment and in the absence of occasion of special difficulty or strain.*

In 7.1 per cent the psychosis has been attributed to alcohol; the further study of these cases has been postponed.

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In 2.6 per cent the psychosis has been attributed to other physical causes: pregnancy, childbirth, lactation, traumatisms, surgical operations, and acute infectious diseases.

In 16.6 per cent the psychosis has been attributed to psychical causes: business troubles, death or illness of relatives, love affairs, domestic troubles, etc.; and in 2.8 per cent to combinations of physical and psychical causes.

In one-third of the cases in which *pregnancy, childbirth, lactation, traumatisms,* or *surgical operations* have been assigned as causes the relationship between the alleged cause and the psychosis is merely one of accidental coincidence in time: there is no etiological relationship. The remaining two-thirds of the cases, however, leave no doubt of these factors being capable of causing insanity, although they do so infrequently. In many cases the manner of their action is obscure owing to insufficiency of data in the clinical histories; *wherever more detailed data are available it appears that these factors act not as physical causes but through their psychical accompaniments.*

Only in two cases out of a total number of 777 was the psychosis ascribed to *acute infectious diseases:* in one to typhoid fever and in the other to influenza. In the first case the anamnesis was furnished by a feeble-minded person and is not reliable; it would seem that the duration of the psychosis prior to admission was much longer than it was said to be, probably dating back a long time before the attack of typhoid fever; in the second case there is much discrepancy between the data obtained from the various sources, so that even the fact of the patient's ever having had an attack of influenza is not established. Excepting febrile and infectious deliria, *the power possessed by the acute infectious diseases of producing insanity is at the most very slight and wholly questionable.*

The various types of *psychical factors* which appear in the statistics may be shown, by analysis of individual cases, to have a real share in the sum total of the causative influences; but these factors never tell the whole story and seldom the most important part of it. In the absence of a detailed history the relationship between loss of position and manic-depressive insanity, destitute circumstances and paranoic condition, disappointment in love and dementia præcox is hardly intelligible. On the other hand where

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the facts are known in detail the environmental conditions given as causes are often seen to be of the patient's own creation. Normally the power of resisting pathogenic environmental influences consists no less of skill in avoiding them than of ability in coping with them: our patients seem to be drawn toward them. In other words a psychosis can be fully understood only when regarded as a gradually developed product of continuous interaction between the subject and his environment. The cases cited for illustration show not only how potent some environmental influences are in determining the onset of a psychosis, but also how essential a part in the course of events is played by the abnormal tendencies of the subject. In reading the story of any case a person of normal make-up imagining himself in the situation of the patient at any stage in the progress toward a mental breakdown, would be apt to say: "I should not have allowed matters to go so far," or "I should do such and such a thing and thus remedy matters," or at least "I should not allow things to affect me so much."

At any rate, leaving aside the matter of complete separation of personal and environmental factors, *the exciting causes of the forms of insanity here considered appear to be invariably of a psychical nature;* and the cases in which no causes are assigned do not differ essentially from others in etiological mechanism: it so happens that in their histories there is no spectacular event to be recorded as "the cause."

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HEREDITARY ATAXIA.

By W. C. SANDY, M. D.,
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Hereditary diseases of the familial type are interesting especially in the light of the increased activity in the study of heredity. In these cases there seems to be something more definite and tangible in the inherited element and there are not the accessory or accidental causes to be eliminated. In the study of such nervous diseases, it is also important to consider the relationship between the different types, if any, and whether they are simply various manifestations or different stages of the same disease process.

In 1863, Friedreich first described the symptoms which afterwards were called by his name. Thirty years later, Marie grouped together a number of cases reported by several individuals and named the disease "hereditary cerebellar ataxia." Since then, it has always been a question whether Marie's hereditary cerebellar ataxia was a distinct disease entity or whether it was closely related to Friedreich's hereditary ataxia, being perhaps a different stage or type of the latter disease.

The prominent features of the two classes of cases are not markedly different, yet there are clinical distinctions which may or may not justify separate classification.

In Friedreich's disease, there are the family type, onset before the sixteenth year, unsteady ataxic gait, a contraction of the posterior tibial muscles causing a talipes equinus, awkward oscillating movements of head and body, arms less affected than legs. There is nystagmus. Pupillary reflex undisturbed. Speech is slow, difficult and indistinct. Patellar reflex lost or greatly diminished. There are rarely any disturbances of sensation, and bladder and rectum are under control. The patients may grow up to die of some intercurrent disease in adult life. According to Starr, pathologically, without going into detail, there is a defective development of all the fibres of the spinal cord most marked in the posterior half, with some atrophy of cells in both horns.

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In the cases described as Marie's hereditary cerebellar ataxia, there is the familial type of heredity, the onset is between twenty and thirty, a gait similar to Friedreich's cases, the same awkward, oscillating movements of head and body, speech slow, indistinct and explosive. The arms as well as the legs are affected. The reflexes are exaggerated and the pupillary reaction is commonly imperfect. There is no deformity of the feet. The supposed distinctive pathologic change was atrophy of the cerebellum.

Since the description of Marie's cases, a number of cases have been reported with various opinions as to classification. Noteworthy among these are Sanger Brown's twenty-one cases. He concluded that these cases should really belong with Friedreich's disease, although the onset was late in life and they showed such unusual symptoms as exaggeration of the patellar reflexes. He thought the disease picture should be modified so as to include such cases.

Ormerod of London and Bernhardt of Berlin, however, in discussing Sanger Brown's paper, both thought that the symptoms being so different from Friedreich's disease they should make up a different type of hereditary ataxia.

On the other hand, supporting the contention that Marie's cases are a type or a different stage of Friedreich's disease are the facts to which Patrick called attention.

He showed that the age of onset in Friedreich's disease varies. Some otherwise typical cases begin later in life. Where there are several members of the family affected, the cases of more recent onset may have typical absent knee jerks, while those which have been going on for some time longer may have the reflexes present or even exaggerated. He also cited some instances where the case began with knee jerks present but later on becoming diminished or absent.

While there may seem clinically to be a real difference in these two classes of cases, yet necropsy often fails to confirm such a distinction. Adolph Meyer examined one of Sanger Brown's cases and found no circumscribed cerebellar lesions. Parts of the spinal cord and medulla having relations with the cerebellum were affected. The characteristics of the lesion were not identical with that of Friedreich's disease, but Meyer explained this by the difference in the age of onset and the extent of the pathological

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process. Meyer concluded that the separation as a clinical type of Marie's cases was anatomically justified to a less extent than Marie expected.

Nonne, however, reports the autopsy in which the only anomaly was diminution of the size of those parts of the brain developing from the fore and mid brain and exceptional diminution in size of the cerebellum, the medulla and spinal cord being absolutely normal.

Patrick's case reported in 1902, under the title Hereditary Cerebellar Ataxia, was probably due to hereditary syphilis. In this paper, Patrick had expressed doubts about there being such a disease as hereditary cerebellar ataxia and pointed out the considerable resemblance his case bore to paresis. A case of Klippel and Durante, one of those originally reported by Marie, showed a normal cerebellum but spinal cord changes found in Friedreich's disease.

Bearing in mind the above uncertainties in classification, the following cases are described as presenting the symptoms grouped under Marie's hereditary cerebellar ataxia.

The M. family in which these cases occurred is of German origin, the grandparents of the patient first described not having come to this country.

CASE I.—F. M., white, male, age 36, laborer, married.

Family History.—Several members of his family similarly affected. Described later on.

Personal History.—Early life negative except showing a defective basis, not making good progress at school or advancing above a common laborer. He has been temperate. Married about 17 years, getting along all right with his wife except he had an abnormally strong sexual appetite. Has had three children.

Onset.—Gradual about eight years ago or at the age of 28. Ataxia began in the legs and has become worse until he has been unable to keep a position, as his employers would consider him intoxicated. He was unable to pick up things or work well with his hands. Naturally quick tempered, he has become more irritable, especially towards wife when she refused to gratify his excessive sexual desires.

On Admission.—He was well oriented and able to walk but with a staggering awkward gait.

Physical Examination.—A fairly well nourished, large boned, muscular white man, height 5 feet 9¼ inches, weight 160 lbs. Some general bodily deformity, chest egg shaped, sternum bent forward at nipple line. Unnatural deep curve of spine at lumbar region with protrusion of abdo-

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men. No signs of syphilis. No subjective complaints. Up and down oscillating of lids when gazing at an object intently. Lateral nystagmus. Pupillary reaction normal. Triceps, biceps and patellar reflexes exaggerated. Ankle clonus present. Motor functions considerably impaired. Mastication segment not good. Unable to move tongue without great effort. Head not moved well on body. Inability to shrug shoulders well. Balancing power not as good as normal. Gait staggering and ataxic. Unable to manage feet well. In standing there are awkward oscillating movements of head and body, protrusion of abdomen and sinking down appearance of chest. Marked speech defect. Pronounces electricity as "electristic." Truly rural as "trury lury." Speech indistinct and explosive. No sensory disturbances. Bladder and rectum under control.

Mentally, he was quiet, orderly and agreeable, inclined to talk and associate with other patients. Answered questions relevantly. At times showed a tendency to be pert or trifling in reply to questions. No paranoid trends, hallucinations or delusions elicited. Well oriented as to time, person and place. Gave a fair account of his past life. Memory for immediate past good. Retention good. School knowledge and calculation probably in keeping with education. Showed some insight, saying he was nervous. Judgment defective in that he thought he was able to work as well as ever.

Since admission patient has gradually become more ataxic and now has to be assisted a little in standing up or walking about. Deep reflexes continue to be much exaggerated with ankle clonus on both sides. Pupils are rather contracted but equal. Reaction to light somewhat sluggish. Nystagmus not constant. There are the same awkward movements of hands, head and body. When commanded to do so, he can stop these movements for a few moments, but they begin again when he tries to change his position or do anything else. He has control of his organic reflexes. Shows some apparent deterioration in not recalling length of time in the hospital and in not being able to give month, day and year. Recalls physician's name, although he has not seen him for some time.

Ophthalmoscopic Examination.—Negative.

Wassermann Blood-Serum Reaction.—Negative.

Case II.—Patient's mother is said by reliable informants to have been similarly afflicted. The onset in her case was at about the age of 34. At this time one of her children was nearly burned to death and she seemed "to go to pieces" from the shock. She became "shaky all over." Her face and hands were never still and for twelve years she was never able to walk but sat in a wheel chair. The doctor called it a disease of the spinal cord.

Case III.—H. M., brother of Case I and son of Case II, was alcoholic. Very little information obtained in regard to this case. He died at the age of 32 in a general hospital. He evidently presented peculiar and unusual symptoms of an organic brain condition, as the authorities were anxious to obtain permission for a post-mortem examination, but the relatives would not allow it. The hospital records have been destroyed, but the certificate of death gave the cause as "brain tumor and meningitis."

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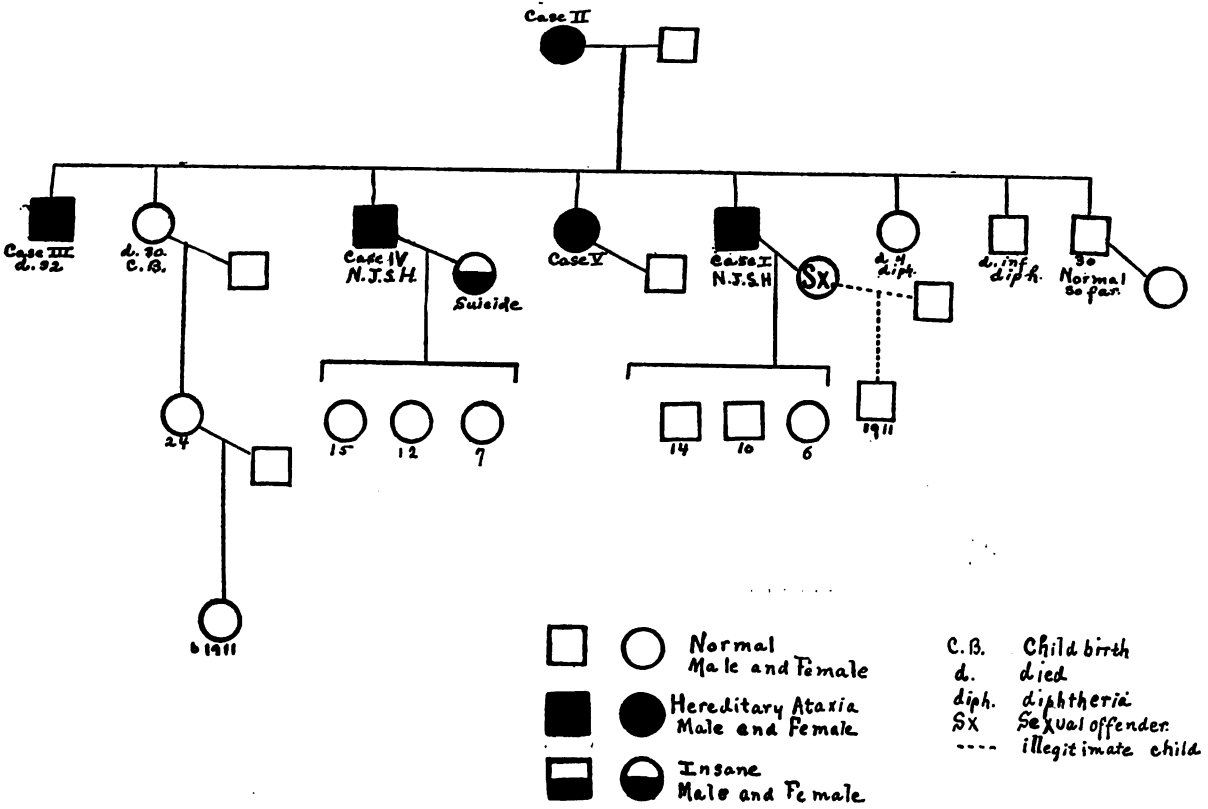

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CASE IV.—Record not very satisfactory, as thorough examination was not made at that time.

J. H. M., brother of Case I and son of Case II, married, age 35, farmer. Admitted to N. J. S. H. December 8, 1905. Symptoms began eight years before admission at the age of 27. When admitted was excited but soon became quiet and showed no delusions or other mental abnormalities. He could walk with difficulty, had awkward movements of head and body, difficult explosive speech. Patellar reflexes were exaggerated. He developed pulmonary tuberculosis and died January 10, 1907. No post-mortem examination allowed.

CASE V.—A. W., sister of Case I and daughter of Case II, age 40, widow. Onset of symptoms said to have been about three years ago at the age of 37, although she has been "nervous" for about seven years since her husband's death making the real onset probably at the age of 33. At present has the characteristic speech defect, awkward movements of hands, body and head, difficulty in walking.

As will be seen by the chart, Cases I and IV have several children, none of whom has yet reached the age of onset, the oldest being fifteen. The three children of Case IV have been described as "nervous" but otherwise normal so far as can be judged. These children, however, have had the additional handicap of an insane mother.

The second daughter of Case II died at the age of 30 of childbirth, normal so far as known. Her daughter is still normal at the age of 24.

The youngest child of Case II, a son, is 29 years old and as yet unaffected.

There are, therefore, five members of the M. family, the mother and four children, who have been affected by nervous disease. Three of these cases, I, IV and V, are known to have presented similar symptoms. According to reliable informants the mother was undoubtedly affected in the same way and from the meagre records there is a strong probability that Case III was one of ataxia. The age of onset varied from 27 to 34, with speech defect, awkward movements of hands, body and head, difficulty in walking. In two cases only are the reflexes reported, in both being exaggerated. There has been no loss of organic reflex control and no marked mental affect. The cases would seem to come under the class described by Marie as hereditary cerebellar ataxia.

As have been stated before, however, the age of onset, the reflex findings and other differential points are not constant.

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Pathological examination of cases regarded as typical have been disappointing, many times showing little or no cerebellar change. Under the circumstances it would seem best to regard Marie's cases and Friedreich's disease as types of the same condition, showing variations due perhaps to age of onset, duration or stage of the disease.

In conclusion, I wish to express my obligations to Miss Florence I. Orr for her assistance in investigating the M. family.

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THE RELATION OF THE APRAXIA PROBLEM TO PSYCHIATRY.*

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Within the last few years, certain disturbances of voluntary movements, forming what is known as the apraxic symptom-complex, have acquired a great importance for psychiatry, occurring as they do in many psychoses and as a symptom of many diffuse and focal brain diseases.[1] The motor apraxias usually accompany localized lesions of the left hemisphere or some portion of the radiations of the corpus callosum, while in the various psychoses the symptom is usually ideational, or of the apraxic-agnostic variety. Recent investigations have also shown that many disturbances of movement, or of the use of objects which are sometimes found in motor or sensory aphasia, are not due to word deafness or to any intellectual defect but to some form of apraxia. Likewise as shown by some of my clinical material, the misuse of objects in demented subjects may be due more to an apraxia than any failure to understand. This was particularly well marked in one of Liepmann's cases and in a personal observation, to be later given in detail in the course of this paper. The fumbling in the use of objects and the perplexity of movement which is so frequently seen in cases of manic or katatonic stupor is also a variety of apraxia. In fact, Kleist has shown how apraxic phenomena may appear in the hyperkinetic and a-kinetic motility psychoses. In some of Stransky's careful analyses in cases of dementia præcox, an apraxia frequently appeared in the form of general helplessness in the use of objects. Here it was interpreted according to the theory of a loss of the inner unity between the understanding and the will.

* This paper forms contribution number three of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

[1] On this point see the various publications of Liepmann.

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In certain brain lesions and psychoses, apraxia is more common than was formerly supposed, and if careful clinical tests are made according to a definite scheme it can frequently be demonstrated, either as a partial or a complete disturbance.[2]

Thus apraxia, either of the ideational or motor types, may occur in a number of conditions, such as brain tumors, particularly of the left side of the brain, in softenings, with degeneration of the corpus callosum, in the unparalyzed left arm in the right hemiplegia, in aphasia, encephalitis, epileptic, hysterical and alcoholic deliria, dementia paralytica, senile dementia, Alzheimer's disease, arterio-sclerotic brain diseases and in the various motility psychoses. Agraphia is frequently merely a variety of apraxia.

In the apraxia problem, more than in aphasia, neurology and psychiatry touch, for here one can most easily perceive the outward manifestations of disordered cerebral processes and most clearly analyze them. The progress in the modern investigations of apraxia have been the most illuminating in our conceptions of brain physiology and pathology. For instance it has been shown that the eupraxic center in right handed subjects is localized in the corpus callosum or in the left hemisphere, particularly in the parietal lobe. The left hemisphere by means of the corpus callosum is guided or directed by the right hemisphere and therefore in left hemisphere lesions, this guiding or directoring influence is lost, the eupraxic center becomes isolated and leaderless and a left sided motor apraxia is the result. Thus the psychology of apraxia is chiefly dependent on short circuited reactions, the derailing of impulses or an isolation of special centers in the brain. This is most clearly seen in focal brain lesions, such as some cases of Liepmann and in certain of my own published material.[3] Dearborn[4] has gone still further and shown how the neurology of apraxia may be considered as arising from some disorder of the spatial sense and has pointed out how important the problem is,

[2] Isador H. Coriat: The Clinical Tests for Apraxia and Their Value in the Diagnosis of Brain Disease. Boston Medical and Surgical Journal, July 20, 1911.

[3] Isador H. Coriat: The Psychopathology of Apraxia. American Journal of Psychology, Jan., 1911.

[4] G. V. N. Dearborn: The Neurology of Apraxia. Boston Medical and Surgical Journal, June 1, 1911.

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particularly from the educational standpoint and in the evolution of ambidexterity.

In Pfeifer's[5] study of the mental disturbances that accompany brain tumors, apraxia was found a number of times. In a left sided frontal tumor which damaged the left motor region, there was a right sided sensori-motor apraxia. In three temporal lobe tumors, an ideational apraxia occurred. In one of these the apraxia was most marked in using a pencil and in lighting a cigar. The patient was apathetic, disoriented and markedly confused. Anatomically there was found a glioma at the tip of the left temporal lobe. In another case of a tumor of the left temporal lobe involving the insula and infiltrating the white substance of the centum semiovale, the corpus striatum and the supra-marginal gyrus, apractic and agnostic disturbances were marked, the patient misusing such familiar objects as a comb and brush.

In Marcuse's case,[6] in spite of the intact condition of the sensory and motor apparatus, there was an inability to make voluntary movements according to a purpose. The patient was a considerably demented woman, who was markedly disoriented and showed a transcortical motor aphasia. The defects of voluntary acts lay midway between a sensory and motor apraxia and were termed an amnestic apraxia. Anatomically there was found a senile atrophy of the brain.

Liepmann[7] has suggested the following classification of the disturbances of motility in cerebral functions. This classification, however, is rather tentative, the types are not sharply or clearly defined and anyone who has investigated the problem of apraxia clinically will see that there is considerable overlapping.

1. Agnosia, which is subdivided into cortical blindness, cortical deafness and tactile, gustatory and olfactory agnosia.
2. Cortical ataxia.
3. Ideational apraxia.
4. Motor apraxia.

In apraxia the reflex or automatic movements as a rule remain undisturbed. The most prominent disorder occurs both

[5] B. Pfeifer: Psychische Störungen bei Hirntumoren Archiv f. Psychiatrie, Bd. 47, H. 2.

[6] H. Marcuse: Centralblatt. f. Nervenheilk, Dec., 1904.

[7] A. Liepmann: Ueber Storungen des Handelns bei Gehirnkranken, 1905.

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in those serial motor mechanisms which are the result of education and experience and also in the use of objects. Motor apraxia is usually limited to one limb and is very rarely bilateral. Sometimes the apraxia in severe organic brain diseases is of so high a grade that the limb movements become almost akinetic or limited to a few elementary acts, as in the case of dementia paralytica reported by Lewandowski. On some occasions, an automatic, monotonous repetition of the same movement may be marked (perseveration), analogous to the recurrent utterances in paraphasia, while under other circumstances one movement may be substituted for another, as in the paraphasic substitution of words.

A complete discussion of the apraxia problem would also comprise an analysis of certain disorders of recognition, such as asymboly, astereognosis, tactile aphasia and cortical sensory paralyses. Apraxia, however, is not a disturbance of recognition, because the objects may be clearly recognized and definitely named. Perception is also unaffected and yet in attempts to use an object or perform a single act, many serious blunders enter, thus demonstrating that we are dealing either with isolated but intact cortical centers, with short circuited reactions or with breaks in the serial order of the mechanisms.

This inability to use objects correctly, or to make movements for the purpose demanded by the will, may also be due to a kind of a continuous amnesia, although, on the contrary, cases of quite extensive amnesia may be quite free from any apraxic disturbances. Thus a great variety of abnormal movements and manipulations and incorrect use of objects are comprised under the general name of apraxia. That apraxia is not due to any intellectual defect is shown by the fact that there is no connection between apraxia and dementia, because most demented subjects show no apraxia and most apraxics are not demented. Apraxia may also occur with or without any combination with motor or sensory aphasia and is frequently found where word deafness is totally absent. At least this lack of an intellectual element is true for motor apraxia, although most cases of ideational apraxia show marked psychical disturbances. In senile atrophy of the brain, an apraxia, if present, is probably due to a kind of continuous amnesia. In some cases of motor apraxia, the subject may think he is correctly performing an act or using an object, when in reality there is

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a marked misuse of objects and a defect in voluntary movements. In still other cases, there is a lively appreciation of the blunders, and the subject becomes quite irritable when there occurs a side tracking of the movements demanded by the will. Here the analogy with aphasia is very striking—the subject frequently knows he is misusing a word or producing a jargon and shows this appreciation of the errors by many impatient gestures. Therefore, it is not always true that an apraxia means an intellectual defect, at least outside of the delirious states and various stupors. A gross disturbance of intelligence is no more liable to be present in apraxia than it is in aphasia. The apraxic symptom-complex is more likely due to an isolation of certain sensori-motor centers, whereby impulses originating in the purpose demanded by the will become side-tracked. The eupraxic center, though intact, is therefore isolated and leaderless. The fact that a most marked apraxic disturbance may occur in limited left hemisphere or callosal lesions when favorably situated is in favor of the theory, as frequently proven by anatomical examination, that apraxia, like aphasia, is a purely focal disorder.

The faulty motor responses which make up the clinical picture of apraxia, are due more to an isolation of certain centers, to a side tracking of impulses, than to an actual intellectual defect or destruction of the motor mechanism. This conception throws considerable light upon the synthesis and correlation of cerebral activity with certain clinical symptoms. All movements, no matter how elementary, are serial in nature, a kind of a chain reflex. A break in the series or any portion of it, leads to the various peculiar phenomena which we now recognize as comprising the apraxic symptom complex, such as perseveration and short circuited reactions. These serial movements, in right handed subjects, are localized in the left hemisphere. Their revival depends upon what may be termed the motor memories for limb movements and when this cannot be done or when the centers for motor memories become isolated or deprived of guidance, an apraxia results. We have an identical mechanism in motor aphasia, namely, an inability to revive those stored up memories in the cortex, necessary for the co-ordination of the lip, tongue, larynx movements in articulate speech. Sometimes the apraxic defect is permanent, sometimes transitory, in this latter case probably due to a diaschisis or temporary suspension of function.

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As an example of the appearance of apraxic disturbances in diffuse and focal brain lesions, the following cases which came under observation offer definite examples.

CASE I.—R. hemiplegia, motor aphasia, left sided motor apraxia. A right handed man, 61 years of age, suddenly became unconscious and developed a complete right hemiplegia. On regaining consciousness the hemiplegia persisted and in addition it was found that he was almost completely aphasic, the vocabulary being limited to the words "Yes," "No" and "Sure."

Physical Examination.—Complete right hemiplegia, left arm and left leg unaffected; right facial paresis; no hemianopsia or limitation of the field of vision; objects readily recognized in each visual field; pupils equal and react promptly to light and accommodation; knee jerks not obtained; right Oppenheim, Babinski and Mendel-Bechterew reflexes; cardiac area enlarged; tongue protruded decidedly to the right; speech dysarthric; no word deafness; vocabulary limited to a few words.

The left arm was absolutely free from ataxia, tremor, incoordination or sensory disturbances and was freely movable in all directions, but it was possible to demonstrate a typical motor apraxia of the left arm. There was no dementia or dulling of consciousness. The false reactions to requests with the left arm on analysis found to be due to a motor apraxia and not to any failure to understand. This was shown by the fact that there were no false reactions with the facial muscles. He knew the names of some objects and could indicate by a "Yes" or "No" or by a nodding or shaking of the head, the names of other objects. From a number of dissimilar articles placed before him on a table he could pick out the correct object on request. There was no disorder of spontaneous behavior and no akinesis of the apraxic arm. Word deafness was absent, as he could correctly and promptly execute all requests with the facial muscles, such as wrinkling the forehead, protruding the tongue, etc.

When he was asked to show with the left hand how he shaved himself he merely rubbed the chin. Asked how he combed his hair he made motions of brushing his teeth. Given a key in the left hand and requested to show its use he held the key like a razor and made shaving motions with it. A comb was used correctly with the left hand. When he was given a tooth brush he used it like a comb. A pencil and knife were correctly used but with considerable fumbling. When shown an object of which he could spontaneously give the name, and several names were mentioned, he quickly nodded the head when the correct name was used. It seemed from this alone that he could recognize objects, that mind blindness was absent and that the aphasia was motor and not sensory. While the movements with the apraxic arm were quickly made there was some evidence of perseveration.

Asked to show how a pair of scissors were used he merely made a fist. When a match was placed in the left hand he used it to brush his teeth. A button hook placed in the left hand was rubbed against abdomen,

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while in a test with a key immediately after the same false reaction was repeated. No signs of astereognosis. He could correctly imitate all movements with the left arm, such as beckoning, saluting, making a fist, etc.

Frequent tests during the next few weeks demonstrated a gradual disappearance of the apraxic disturbance, thus demonstrating that the motor apraxia in the case was probably due to a diaschisis or temporary suspension of function.

CASE II.—Cerebral thrombosis, confusion and disorientation, arteriosclerosis, hemianopsia, amnesic aphasia, paragraphia, alexia, agnostic apractic disturbances. A man of 59 suddenly became confused, disoriented and unable to find words to express his meaning. There was some complaint of dizziness, but no paralysis, although it was noted that coincident with the confusion the right pupil became dilated.

Examination.—Confused, restless, completely disoriented, misuse of words, although able to indicate his wants by pantomime and gesture; walked as if blind in the right field of vision; marked arterio-sclerosis; grasps weak but equal; right pupil slightly larger than the left, but both reacted to light and accommodation; ocular movements normal; no nystagmus; right homonymous hemianopsia; gait somewhat staggering; K. J. diminished but equal; no Babinski or ankle clonus; no paralysis, tremor or ataxia of arms; no mind blindness or word deafness; marked paragraphia; annesic aphasia; apraxic-agnostic disturbances were marked. Asked to remove his stockings he merely rolled up the trousers and then stood erect in a military attitude. He was unable to imitate simple movements and tended to automatically repeat all incorrect reactions to requests. When asked to touch the right ear with the right hand he merely snapped the fingers, then elevated the arms and rubbed the forehead. When a hair brush was placed in either hand he used it as if it were a fan. A button hook was used in the same manner. When a pipe and tobacco were placed before him and he was requested to fill the pipe and light it he merely rubbed his hand over the tobacco. There was complete inability to use a spoon, cigarette or knife. He merely fumbled aimlessly with these objects. Tests for reading demonstrated a complete alexia.

Later there developed a twitching and finally a weakness of the right arm and right leg, with an Oppenheim and Babinski reflex on the right and finally a crossed Oppenheim and Babinski reflex (i. e., obtained on the right only when the left sole or left tibial crest was stroked). He gradually failed and died of asthenic pneumonia.

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A STATISTICAL STUDY OF MANIC-DEPRESSIVE INSANITY WITH ESPECIAL REFERENCE TO PHYSICAL ILLNESS AS AN ETIOLOGICAL FACTOR.*

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Formerly manic-depressive insanity was regarded as a functional psychosis in which the attacks of excitement or depression appeared more or less spontaneously and often without demonstrable cause, and even now most text-books say little or nothing concerning its pathology. In generalizing and reviewing isolated cases often little appears to suggest an organic basis either with reference to the brain or other organs. The records of many of our cases show no history of physical illness and, after recovery, the patient often denies its existence before the onset of the attack. The friends describe a condition of physical weakness, nervous prostration, exhaustion, sleeplessness, etc., before an attack, which may have been of long duration, and we usually date the onset of the attack back to the appearance of these symptoms, whereas, in this, the promonitory stage, the physician is often dealing with a distinct metabolic disturbance in which prophylactic measures might have suggested themselves and in some instances would undoubtedly have done much to modify the course of the disease.

In reviewing a large number of cases we are struck with the fact that etiologically and clinically we are dealing with individuals who may belong to one of two large groups: first, those who possess a manic-depressive constitution, and those in whom the outbreak appears accidental.

The Constitutional Types.

In this group we find persons in whom there is a strong constitutional liability to mental disease by reason of hereditary taint, neurotic tendencies, inherent nervous irritability, and constitu-

*This paper forms contribution number four of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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tional inferiority. Manic-depressive insanity may have existed in the family for generations and the tendency may be transmitted to the offspring. Our histories show that it is transmitted as such to the offspring with conspicuous frequency. Even within the limits of normal life there are peculiarities of temperament from early life to senility, which preserve their characteristics throughout life. In some we find sadness and despair, others are dull, introspective, sensitive and retiring; others are alert, over-active and optimistic; they are good companions, are interesting and entertaining. Both represent an individuality which is constitutional, and which in the extreme represents the manic-depressive constitution. These patients, when at their best, are not intellectually inferior to others of their class or opportunities, but they have well-marked peculiarities, eccentricities or hobbies; they show a nervous instability and are emotional and high-strung. Slight irregularities in the life of such individuals are apt to offset the normal balance. The attacks appear to break out spontaneously and often without apparent cause, and though prolonged are apt to be superficial in character. Continued hospital residence for this type of patient places him in the most favorable environment and tends to diminish the frequency and severity of the attack. The patient can be guarded and protected as soon as there is a recurrence and he is often able to foretell and forestall an attack. Such patients, when allowed to visit at home, are not infrequently returned to the hospital after a very short interval, the excitement, incident to leaving, traveling, etc., being sufficient over-stimulation to cause a relapse. Some patients of this type develop considerable insight into their instability and have no desire to leave the hospital even when at their best, but employ themselves in some useful manner. While at times the contentment which such patients display in their normal intervals may be considered evidence of indifference and deterioration, it is often found, on the other hand, after careful inquiry that this attitude is rather evidence of sound judgment.

A certain periodicity is also found in many cases of this type. The patient will tell us that "my attacks always begin in November" or "August," etc., or any other time, and the records show that this often occurs. This again suggests the psychical element in the causation of recurrent attacks. Certainly these patients develop attacks without any manifestations of metabolic dis-

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turbances. Certain patients have regularly two or three attacks a year; others have them at irregular intervals. It is a matter of common observation that patients of this type often have a relapse soon after recovery from the first attack, and with a marked neuropathic or hereditary taint this recurrence should be expected.

The first attack in the constitutionally predisposed case is often preceded by some illness, but subsequent attacks are usually sudden in onset and without apparent cause. We further find that these cases are often atypical in character, often hallucinatory or actively delusional and even in the so-called normal interval we find peculiarities of thought and conduct which mark these patients as clearly abnormal. Repeated frequent attacks bring about a certain deterioration and exaggeration of the atypical symptoms, and if the patients live to an old age mental enfeeblement is added to the picture.

Preceding the first attack we frequently have a history of overwork, loss of strength, sleeplessness, privation and worry. This may be active over a period of many years leading to a wreck of physical and mental energies, bringing about undoubted metabolic changes which may affect the nervous system. A condition of exhaustion is brought about which is frequently found in our histories. Add to it sudden grief, fright, financial difficulties and other worries and an attack appears, the latter acting merely as exciting causes.

The Accidental Group.

In the accidental group we find attacks of manic-depressive insanity appearing in individuals who conform to the general social, moral and intellectual standards, but who have suffered from physical disease, toxæmias or mental stress, which have impaired the functional activities of the nervous system.

In this group the factors of physical illness, exhaustion and intoxications play an important part and precipitate a psychosis of graver significance, of greater severity, but often of shorter duration. The onset is apt to be of a deep delirious type with utter confusion and disorientation and accompanied by psychomotor restlessness. At this time marked febrile disturbances occur, the pulse is rapid and the heart action feeble. This elevation of temperature is so common and the fever often so high that it cannot be ac-

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counted for merely on the grounds of psychomotor activity. A series of leucocyte counts was made which showed the following results even in cases which had no history of actual physical illness.

A differential leucocyte count, made during the height of maniacal attacks, showed almost invariably a large excess in the number of polymorphonuclear cells, in one case 91.5 per cent. In several instances the total leucocyte count was not above normal, but the same striking excess of polymorphonuclear cells was present.

After the initial excitement of short duration with its danger to life has passed there is a gradual abatement of the manic excitement and coincident physical improvement. Usually the progress is steady and uninterrupted though it may be slow. It is found that there is usually a more or less clear cut amnesia for the initial excitement.

The impression that manic-depressive insanity in a great many instances represents an exhaustion psychosis has found its support in many histories and in the physical appearance of the patient upon admission.

From the review of a large number of cases it appears that the successive attacks either of the manic-depressive, circular or mixed types do not as a rule show any marked departure from the initial attack. This is so conspicuous, in fact, that with each readmission we feel a peculiar familiarity with the patient, recognize his former insane traits, know in a general way what the character of the attack is apt to be, and barring unusual circumstances, give with a fair degree of accuracy the prognosis of the attack as to severity, nature and even duration. We feel perfectly familiar with his abnormal mental state. It is rather the exception and not the rule that the character of successive attacks differs markedly from the original. The slight variations which occur appear to bear no direct relation to the cause of the attack or to the length of the interval between attacks. As regards the finer details of the successive attacks, but few differences are noted, and as each new attack may have been observed by a different physician there is naturally not the uniformity in results which would be desired. The one factor, probably, which has had more to do with the change of character of repeated attacks than any other is the change of treatment, and undoubtedly hydrotherapy and improved nursing has shortened and modified favorably many attacks.

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As a general thing the maniacal attacks and depressed attacks repeat themselves as such. If the psychosis is of the circular or the mixed type the subsequent attacks take on the same general character. It is, however, not uncommon to have a typical attack of depression appear somewhere in a series of maniacal attacks and vice versa. Here again we are unable to explain this variation etiologically or upon clinical grounds. With the advent of the involution period and in senility the attacks frequently take on a new coloring, and symptoms are often noted for the first time which belong to the psychoses of these periods. Recurrent attacks of simple depression may show at the involution an anxious, restless depression with somatic delusions, and in old age may be added symptoms of senile psychosis.

The diseases which were assigned as causes in our cases were manifold and their enumeration is unnecessary. The attacks were most frequently initiated by febrile or toxic conditions. The presence of albumen and casts in the urine was frequently noted, though this was as a rule of short duration. Many patients had organic heart disease, and one patient especially had attacks of typical depression coincident with cardiac incompensation. Influenza was a common initial factor and in women the puerperal state and lactation were frequently responsible for outbreaks of mental disorders, and here it was noted that recurrent attacks were particularly liable to follow a repetition of these causes.

Mrs. A. has had two short maniacal attacks every year for the past twenty-five years, and continues to have attacks of the same nature to-day, which come on without apparent cause and last as a rule a month or two. She was peculiar and had a marked hereditary history. She has frequently gone home with almost immediate recurrence. She is now senile and is childish and playful in her so-called normal condition, more after the manic than senile character. She has a good memory, but has clearly failed mentally and has reached a nearly continuous hypochondriacal condition with frequent exacerbations.

Mrs. B. has had for seventeen years alternating manic and depressed attacks with apparent normal intervals. In her depressions she is always much retarded, sad and hopeless; in her manic phase she is noisy, exhilarated and sarcastic; the transition is almost instantaneous. The attacks are short, one or two months duration.

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Mrs. C. has similar alternating cycles, but each attack of mania and depression lasts from one to two years.

Miss D.'s father has had two long attacks of depression, while she herself has had five or six attacks of depression in which the prominent feature is a little depression, with a periodic mysophobia; the attacks run their course in a year or two and reappear in the same form. She is intelligent, but knows of no cause for her condition.

Miss E. has had a circular form of manic-depressive insanity since a young girl. She has had several normal intervals when she went home and soon reappeared in a highly maniacal state. She has been in a hospital continuously now for five years and has had several long depressions. For the past year she has been quite normal, and realizes that she remains quite free from her attacks while in the hospital and is resigned to the situation.

Miss F. shows a strong constitutional defect, has yearly maniacal attacks and in the interval is fussy, restless and shows a marked abhorrence for dust; spending the entire day in cleaning up her small room.

Mr. G. has repeated severe maniacal attacks if he goes home, even for a day or two, while at the hospital he is usefully employed and if excited remains in from work for a day or two of his own accord.

And so, we might cite cases indefinitely. In the above types of constitutional cases the claim is made that they never have a first attack, that the attacks are merely exacerbations of an inherent manic-depressive condition. Though admitting that there is a manic-depressive constitution, I should not subscribe to this extreme view, for our histories show that not infrequently the first attack follows some illness, exhaustion, physical breakdown or mental stress. Once started it repeats itself apparently without cause. One woman had a shock at the age of 44 which for fourteen years has been followed by an uninterrupted succession of circular attacks of manic-depressive insanity. She had been entirely normal up to this age.

Some cases may appear in the involution period for the first time. Finally, there are those cases in which the first maniacal attack appears in senility, without showing any symptoms of senile dementia. In these cases the prognosis is not good and the psychosis is evidently modified by the senile changes in the brain.

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The statistical facts here presented were deduced from a review of 275 cases.

225 cases were examined with reference to the temperature on admission to the hospital or during the first week.

15 cases showed normal temperature.

67 cases showed no record.

143 cases showed a temperature over 99.

62 from 99 to 100.

50 from 100 to 101.

17 from 101 to 102.

13 from 102 to 103.

1 from 103 to 104.

Care was taken in this group to exclude cases in which the temperature could be accounted for as a result of pneumonia, tuberculosis, sepsis, etc. In these cases no definite physical illness could be demonstrated.

In regard to the etiology of manic-depressive insanity our statistics show the following points:

Heredity stands out prominently and foremost and was assigned as a cause 260 times.

Physical illness comes second, appearing as a cause 145 times, with a great preponderance for the first attack.

Mental causes were third, 144 times.

In 113 cases no causes could be found and 65 times there was a constitutional liability to manic-depressive insanity.

In 124 cases a comparison of the weight upon admission with the weight upon recovery was made. Upon admission the weight was usually reduced from previous illness, exhaustion, etc., but was usually recorded early enough not to have been caused by excitement. 108 patients showed a gain of from 1 to 50 lbs. 16 showed a loss and the attacks were of long duration. It was almost universal to have the weight curve drop in the first few weeks of hospital residence and then to rise steadily. This was as common in recurrent as in first attacks.

The first attack occurred in individuals of all ages ranging from 10 to 70 years. It was found that the first attack began most frequently between the ages of 20 and 30 in both men and women. It was also shown that those who had recurrent attacks had their

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first attack between 20 and 30 and in women there was also a large percentage of recurrent attacks in those who had the first attack between the ages of 40 and 50.

In reviewing the causes for the various attacks we find for the first attack that heredity has the first place in the etiology and physical illness (24 per cent) comes second, the two being in frequent combination. Mental factors follow, then the constitutionally predisposed and finally those of unknown etiology.

For the second attack physical illness (18 per cent) shows a marked falling off, being fourth in order, and is preceded by heredity, unknown causes and mental causes.

In the third attack illness was ascribed as the cause in 13 per cent of the cases; in the fourth attack 9 per cent and in the fifth none, showing illness as a cause to be a diminishing factor with each recurrent attack.

FREQUENCY OF CAUSES IN VARIOUS ATTACKS.

		Heredity.	Illness.	Const.	Mental.	Unknown.
1st att.	Male:	60	31	23	37	20
	Female:	81	69	22	52	21
	Total:	141	100(24%)	45	89	41
2d att.	Male:	25	11	8	13	17
	Female:	31	18	1	18	15
	Total:	56	29(18%)	9	31	32
3d att.	Male:	12	3	4	5	13
	Female:	18	8	0	5	11
	Total:	30	11(13%)	4	10	24
4th att.	Male:	10	3	4	5	7
	Female:	10	2	0	6	5
	Total:	20	5(9%)	4	11	12
5th att.	Male:	6	0	3	0	3
	Female:	7	0	0	3	1
	Total:	13	0(0%)	3	3	4

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In most cases where the first interval was short the succeeding intervals were also short; if they were long the succeeding intervals were long.

The duration of the interval is no criterion as to the length of succeeding attacks. Here again if the first attack was of short duration the succeeding attacks were also short regardless of interval, or long, as the case may have been. When the attacks were oft repeated the intervals were generally shorter as age advanced, and the attacks appeared more or less chronic in character, often with incomplete recovery, or with evidence of intellectual deterioration.

It was observed that when the first attack was brought on by sickness many of the succeeding attacks also followed some illness. For example, one patient had pneumonia preceding the first attack; childbirth and lactation acted as causes in two succeeding attacks. In another case a woman had four attacks, each one following childbirth. In these cases the attacks were usually of short duration.

It is repeatedly found in our histories that young women who have an attack of manic-depressive insanity following childbirth develop identical attacks with each succeeding labor, though we may presume that any illness or severe metabolic disturbance might bring on another attack.

On the whole, successive pronounced attacks seem to take on the character of the first and our statistics show that there is but little variation as to duration.

In five years we discharged from the Worcester State Hospital 222 cases of manic-depressive insanity: 75 men and 147 women. Of these 113, 31 men and 82 women, had had only one attack. 43, 14 men and 29 women, had had only two attacks, and 66, 30 men and 36 women, had had three or more.

The duration of normal intervals varied from one month to 27 years. In the greatest number of cases the interval between the first and second attacks was from two to five years; from one to two years, next; from five to ten years, next; and from six months to one year, next. The same is true between the second and third attacks. Between the third and fourth attacks the most frequent interval was from six months to a year; between the fourth and fifth from two to five years.

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During a period of 10 years, 703 cases of manic-depressive insanity were admitted to the Worcester State Hospital, out of a total of 5706 patients, constituting 12 per cent of admissions. Of this number 309 or 43 per cent have as far as is known had only one attack.

The fact that physical illness was found to be a cause in 24 per cent or nearly one-fourth of the first attacks of manic-depressive insanity is significant, and of particular interest is the steady falling off of somatic causes in the succeeding attacks.

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SOME TECHNICAL METHODS FOR THE ROUTINE EXAMINATION OF THE BRAIN FROM CASES OF MENTAL DISEASE.*

By SAMUEL T. ORTON, M. D.

(From the Laboratory of the Worcester State Hospital, Massachusetts.)

Our present knowledge of the histological and functional variations of various areas of the cerebral cortex renders imperative an examination of a number of different fields, if one is to even roughly approach a survey of the pathological conditions underlying mental diseases. The examination of brains in such a broad method must necessarily be confined to the study of special cases, but it is advisable to apply as wide a routine examination of all cases coming to autopsy as is possible, and the methods here described have been developed for the purpose of simplifying the technical procedures involved and thus reducing the amount of time and labor required.

In the selection of material for examination the writer follows the routine carried out by Dr. E. E. Southard while at the Danvers State Hospital. This includes pieces from the precentral, postcentral, first frontal, first temporal, occipital, and hippocampal regions from each hemisphere, from each side of the cerebellum and from the medulla and three major levels of the cord. The sections may well be indicated by a diagram, Fig. 1, which shows the lines of section and the points, marked with crosses, from which the smaller pieces for embedding are taken after fixation.

Section A represents frontal cortex and is taken from the mesial border of the hemisphere through the first frontal gyrus and all or part of the second.

Section B crosses the fissure of Rolando and while taken as a sample of precentral and postcentral cortices also includes parts

* This paper forms contribution number five of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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of the intermediate precentral, intermediate postcentral and some times also parietal and frontal fields.

Section C is through the occipital pole and includes visuopsychic and visuosensory cortex.

Section D passes through the fissure of Sylvius and represents auditopsychic, auditosensory, common temporal and parietal cortices.

Section E includes the hippocampal gyrus and the cornu ammonis.

The sections from the medulla are shown and the upper border of the cerebellar plane of section is indicated by line of dots and dashes.

These sections are cut in triplicate as indicated by the three lines in each field in the chart and preserved in alcohol, Zenkers fluid and formalin for the display respectively of the nerve cells, glia fibrils and myelin sheaths after the appropriate staining methods.

As the pieces are cut each receives an identifying filter paper slip. The writer employs squares to represent the material from the right hemisphere and triangles from the left. Thus the right and left frontal sections will bear respectively a square and a triangle marked with an F, the precentrals marked with the symbol Pcl., etc. The albumens of the tissues impregnate the filter paper and the fixative solutions coagulate them so that the tag is firmly affixed. After fixation this material is kept in "lightening jars" until the smaller pieces are cut from it for the embedding and sectioning. This calls for three jars for each brain, however, and the outlay both in money and storage space to keep material in this way permanently has prompted the trial of a cheaper method which has proven entirely satisfactory. A piece of unbleached muslin 14 x 12 inches is folded along a horizontal line so that the fold includes about the lower third and seven perpendicular machine seams are then run through the folded part giving a six pocketed bag with a flap to fold over to prevent the sections from falling out. Pocket number one contains section A, number two section B, etc., and after the small pieces are cut for embedding, these bags with their reserve material are folded up, marked with a soft lead pencil, tied with string and put into a large anatomical jar. Three such large jars will thus store the

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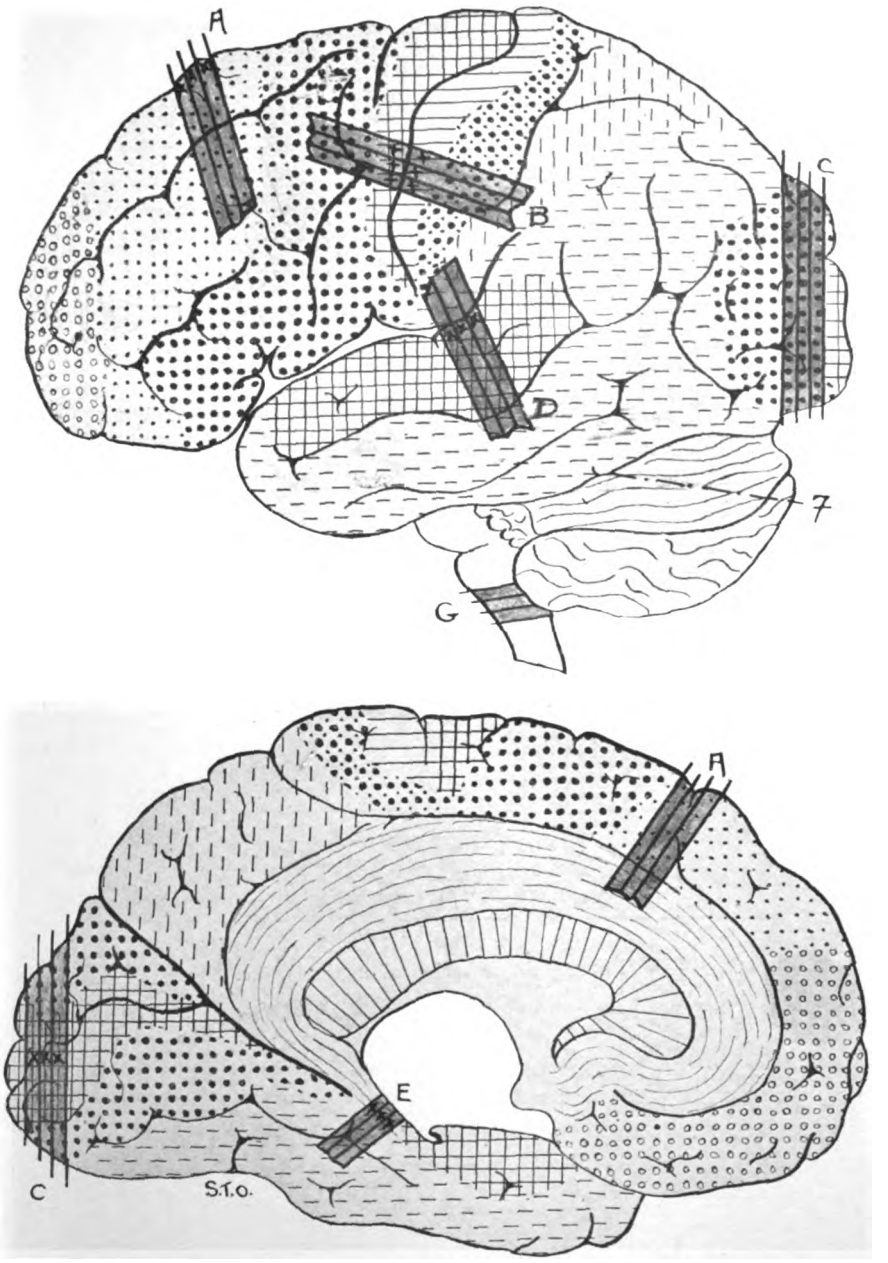

FIG 1.

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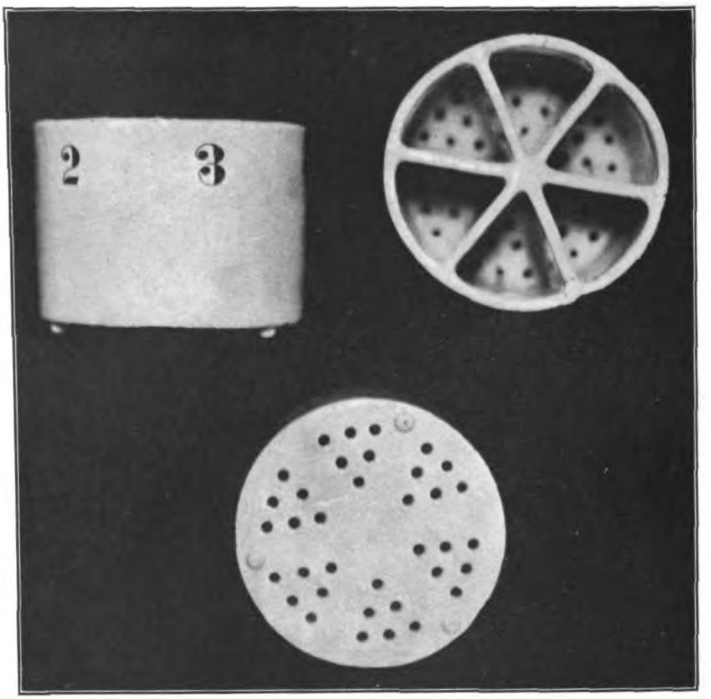

FIG. 2. Some technical methods, etc.

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material from 25 to 35 cases, leaving the " lightening jars " ready to be used again.

In taking the small pieces from the original sections the same method of squares from the right and triangles from the left is followed. There are at this stage six squares and six triangles of cortex, a square and a triangle of cerebellum, a section of the medulla and three of the cord, from each of the three fixatives. The task of separate embedding of this set of 54 pieces is prohibitive and while the method of wrapping the pieces in gauze and separating into segments by tying with twine is entirely feasible it is tedious and time consuming and the amount of reagents held in the gauze and transferred from one container to the next weakens the solutions rapidly. To care for this part of the technique partitioned baskets of brass wire gauze were first tried but had to be discarded on account of some interaction between the metals and the tissues or reagents which interfered seriously with the paraffin Nissl stain and absolutely precluded the phosphotungstic acid hematein stain for neuroglia. This difficulty has been overcome by the employment of partitioned porcelain dishes with perforated bottoms which have been made for the purpose by the Bausch & Lomb Optical Company (Fig. 2). These porcelain baskets have six numbered compartments of sufficient size to carry the required material and perforated bottoms and feet so that there is chance for interchange of solutions by diffusion. The embedding solutions are kept in wide-mouth glass stoppered anatomical jars 80 x 80 mm. and the porcelain basket with its contained tissues is lifted from one, allowed to drain and put into the next, giving an easy method of carrying all the tissues in identifiable order and at the same time doing away with the factor of damage in handling the pieces by forceps and preventing the rapid mixing of the solutions which takes place when considerable amounts of gauze are carried along to keep the sections separate. The routine order adopted in this laboratory is shown by Fig. 3.

The baskets may of course be used in any technique where it is necessary to keep blocks separated during the embedding processes and are proving very useful in various fixing and mordanting solutions for special examinations.

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FIG 3.

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The tissues are thus carried in baskets through the dehydrating and preliminary embedding solutions without handling until they are ready to be transferred to the paraffin oven. Here for the first and only time the forceps are used, the pieces being removed in regular order into copper pans with removable partitions for the final steps. The partitions and pan are thoroughly cleaned of former paraffin by heating and wiping while still hot and then "greased" with a modification of Mayers glycerin-albumen mixture (glycerin two parts, white of egg one part, thymol to preserve). This mixture spreads easily and smoothly over the hot pan and does not tend to collect in droplets which later leave depressions on the paraffin blocks as pure glycerine does. Each paraffin block carries two sections, *i. e.*, a triangle and a square representing left and right cortex of the same type, thus cutting down by half the technical steps of cutting and staining. Thus the paraffin Nissl slides from one case consist of a precentral pair (triangle and square) and similarly a postcentral, frontal, temporal, occipital, hippocampal and cerebellar pair while the cervical cord is paired with the medulla and the dorsal cord with the lumbar thus combining the 18 sections onto nine slides. Similar combinations group the phosphotungstic acid hæmatein and Weigert (celloidin) sections on nine slides each.

All paraffin blocks are stored in pasteboard "powder boxes" so that additional slides may be cut at any time without reimbedding pieces.

The slides are kept in ordinary slide boxes until the microscopic examination of a years collection is finished and then stored on edge in partitioned drawers after the method suggested by Dr. E. E. Tyzzer, thus allowing repeated use of the slide boxes and effecting a large saving of storage space.

The main bulk of the brain and cord after cutting the pieces for the various fixatives is preserved in 10 per cent formalin in covered stone jars until such time as the microscopic examination is complete. If nothing is found to require more tissue or wider examination the brain is wrapped in gauze, tagged and stored in formalin in a barrel, thus allowing the repeated use of the stoneware jars.

Special charts of the lateral, mesial and superior aspects of the brain, superior and inferior surfaces of the cerebellum and one

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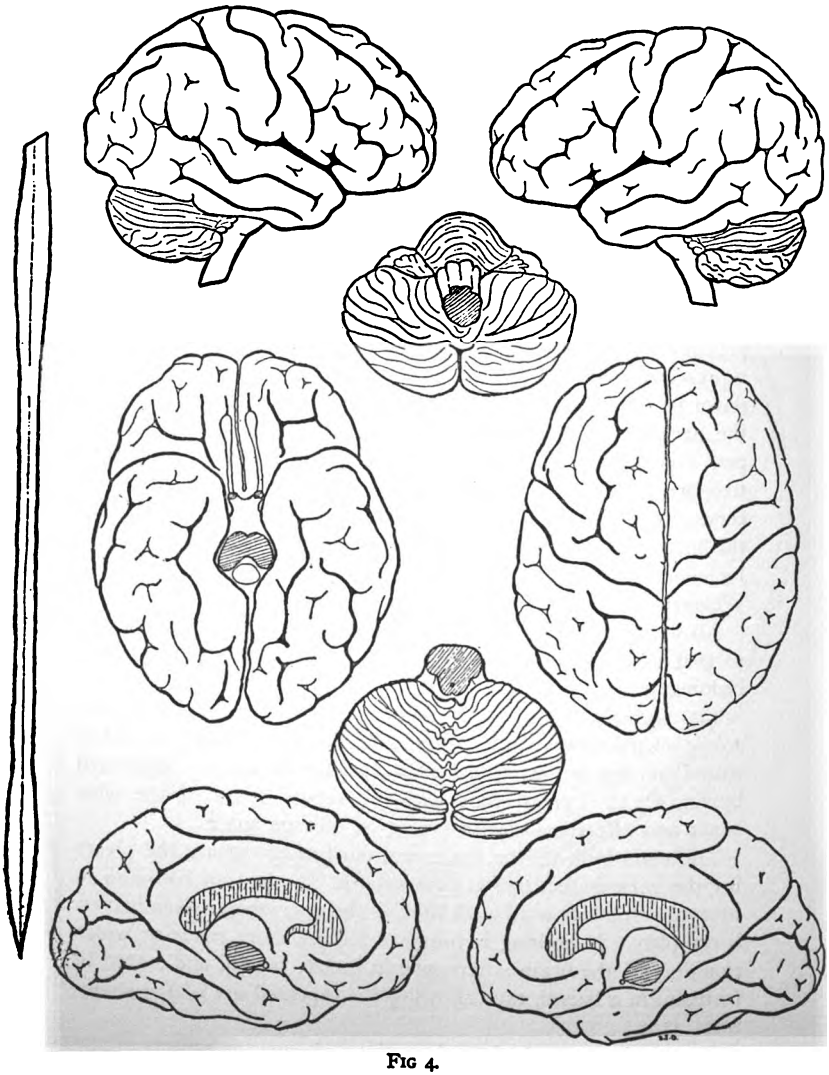

FIG 4.

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face of the cord have been prepared and are used to form a graphic record of the exact localization of focal lesions such as hæmorrhages, softenings, tumors, areas of increased resistance, etc. (Fig. 4). The localization of the lesion is carefully plotted on the chart together with a note of its type and filed with the case record to amplify the written description.

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Notes and Comment.

THE ALIEN INSANE.—All who attended the meeting of the Medico-Psychological Association in Atlantic City will recall the interest shown in the discussion of the subject of the deportation of insane and mentally defective immigrants.

New York being the principal port of entry for immigrants, is naturally the center of interest when the disposition of undesirable applicants for admission to the country is considered. The State of New York has imposed upon it the maintenance of a large proportion of the alien insane, and, as would be expected, it is anxious not only to be relieved of some portion of the burden, but to have put into operation efficient measures to prevent an increase of that burden. The last report from the State Hospital Commission shows that 13,163 patients in the state hospitals, or 41.9 per cent of the total population of these institutions, are aliens, and that this is an increase in nine years of 13.4 per cent. According to the census of 1910 the proportion of aliens to the whole population was 29.9 per cent. It will therefore be seen that a disproportionate number of the foreign born become insane when practically thirty per cent of the population, the foreign born, furnish 42 per cent of the population of the state hospitals. The state is not only anxious that those who under the law are liable to deportation should be deported, but that such deportation should be accomplished in a suitable and humane way, and that the insane persons deported should be cared for in a proper manner and by attendants or nurses accustomed to the care of the insane. The steamship companies are averse to this plan on the ground of expense and several conferences have been held looking to the best solution of the problem. A conference was held on June 28 between Mr. Edward B. Sanford, attorney representing the steamship companies, Mr. Goodwin Brown and Dr. George S. Campbell representing the State Hospital Commission and former Congressman William S. Bennett at which the following agreement was made concerning the deportation of some two thousand alien insane now in the New York state hospitals:

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The steamship companies agree to take the alien insane at their ordinary steerage rates if they are notified before sailing of the patient's condition and assured that he is not dangerous. The Commission will turn over to each of the lines the patients who came to this country by that line and will furnish full information as to the identity and place of destination of each alien sent to his former home. The passage money is to be paid by the state. It is estimated that from six months to a year will be required to deport the whole number.

There may be certain details of this arrangement which have not come to our knowledge but when one recalls the pictures which were drawn at the meeting in Atlantic City of the kind of care—or rather of the almost total lack of care—meted out to the unfortunate deported insane alien during his passage to Europe and the methods pursued after landing to convey him to his former place of residence, it would appear that this agreement leaves something lacking to make it conform to the requirements of humane treatment.

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Book Reviews.

Backward and Feeble-Minded Children. Clinical Studies in the Psychology of Defectives, with a Syllabus for the Clinical Examination and Testing of Children. By EDMUND BURKE HUEY, A. M., Ph. D. (*Baltimore: Warwick and York, Inc., 1912.*)

In his preface the author states that usually only the lowest grade of feeble-minded children fail to find their way to school. They usually show exceptional conduct at this time and show that they need special attention. The author believes that it is possible to study *in advance* the main sources of social danger and of individual misfit and shipwreck. There is immediate need of special classes for children who need a special pace, course or treatment to enable them to win at something useful instead of failure at something useless. It is impossible to care for all our defectives in institutions. "A competent clinician-educator in the schools can render at least the service of an institution superintendent in organizing the activities of defectives; and far more, for he can really save the state the cost of maintaining an additional institution for such cases." The importance of an early diagnosis of dangerous mental tendencies and habits is also dwelt on. "This little volume suggests but a few of the possibilities of such clinical work." The above is the keynote of the work.

There are seven chapters to the book; namely, Introduction; Classification and Terminology; Clinical Studies of Border Cases (2); Tabulation of Data, Suggested Groups, Lines of Transition from Feeble-Mindedness to Non-Feeble-Mindedness; A Syllabus for the Clinical Examination of Children; Conclusion—The Mental Functions to be Tested and Observed. There are also a Bibliography, an Index of Cases, and an Index of Subjects and Names.

The studies of the children of whom case histories are given, were made at the Illinois Institution for Feeble-Minded Children at Lincoln. They are admirably given and well illustrate the subject. The syllabus for examination is an exposition of the Binet-Simon scale as well as an outline for history taking and medical examination. It is very complete and if it is possible to carry it out entirely in a case constitutes a very complete record.

The book is written in a very clear and simple style and is of great value to all interested in the education of children or the care of defectives. Mechanically also there is nothing to criticize.

W. R. D.

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The Sexual Life of the Child. By Dr. Albert Moll. Translated from the German by Dr. Eden Paul, with an introduction by Edward L. Thorndike, Professor of Psychology, Teachers College, Columbia University. (*New York: The Macmillan Company, 1912.*)

There is a story of an Italian inn-keeper who when questioned by his father confessor as to certain methods of cheating his customers' horses out of the oats, apparently fed to them, denied all such practices, but ever after at confession made acknowledgment of the very sins which he formerly denied. When asked why he was guilty of sins of which he had formerly been innocent he replied naïvely that he had never known of these fraudulent practices until he had learned of them at the confessional and had profited by the instruction which he had thus received.

There is always a certain degree of fear that books like the one before us may in a measure defeat the laudable object for which they have been written by supplying knowledge which, instead of satisfying curiosity as to sexual matters may only stimulate inquiry and investigation on the part of the young and immature. It will, of course, be asserted that some sort of knowledge will be acquired inevitably by the boy or girl and that a book should be placed before them which will deal frankly with problems of sex life before there is any danger that they may acquire partial or misleading knowledge. This we doubt, because we believe that the most valuable part of the book under review is to be found in the concluding chapter entitled Sex Education, in which the author discusses sensibly and sanely the best methods of giving boys and girls some adequate knowledge prior to the time when they will acquire it at school or from contact with their associates or the servants. His conclusions are as follows:

"The sexual enlightenment of the child is advisable. The biological processes of sex in the vegetable and lower animal world may be taught in school as early as the second period of childhood. [This the author has previously explained is from the beginning of the eighth to the end of the fourteenth year.] A warning against the dangers of venereal infection may be given at school to the senior pupils shortly before they leave or at some similar suitable opportunity. But for effecting enlightenment regarding the processes of the individual sexual life the school is unsuitable; this matter can best be undertaken by some private person and above all by the mother. Choice of the time for this last phase of sexual enlightenment must be guided in part by the child's physical maturity but more especially by the indications of psycho-sexual development."

This seems to confirm the view which we have always held that the efforts of many primary school teachers to guide the footsteps of the young along the stony pathway of sexual education were in danger of doing harm rather than good and should not be encouraged. It is easy for immature teachers to give vague and misleading instruction to young children in sexual matters in the form of nature study, but can such inexperienced persons avoid the greater peril of fostering a precocious and morbid curiosity which may lead to improprieties between young children if not to actual sexual assaults? Instruction to be of value in such matters cannot

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be given to a school *en masse,* but should be personal and private; neither too general nor too specific. The parents without entering into details can say, with authority, that certain acts and personal habits are wrong and are forbidden because harmful to health and then not content with precept alone they should satisfy themselves that their instructions and admonitions have been heeded. The analogies of fruit and flower, so often mentioned and so poetically dwelt upon by earnest reformers are too remote and too little understood by children to be of much value.

The volume before us contains much valuable material gathered by the patient industry of a German which seems better adapted to the needs of a physician than to those of the teacher, notwithstanding the statement of Prof. Thorndike in his introductory note that the book has been translated into English to meet the need of teachers, social workers and physicians as well. A briefer manual with a less widely gathered mass of facts regarding sexual anomalies, perversities and precocities would give greater help to teachers, social workers and laymen generally.

To physicians and especially to those who study and treat mental and nervous disorder the book is valuable by reason of its facts and conclusions. The translation has been made with great care and is to be commended as an example of painstaking fidelity to the text and to the requirements of the person who can only read it in its English dress.

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Half-Yearly Summary.

ARKANSAS.—*State Hospital for Nervous Diseases, Little Rock.*—This hospital is about completed and is expected to soon receive patients, of whom it will accommodate 150.

Further accommodation for about the same number of white women have been made by converting the building originally erected as a dairy farm into a model infirmary. It has been remodeled and completely equipped.

COLORADO.—*Home for Mental Defectives, Denver.*—This home was opened for the reception of patients July 21, 1912, when sixteen children were received. They had previously been cared for in a private institution at Pueblo, although they were wards of the state. The home has accommodations for 80 patients.

CONNECTICUT.—*Hartford Retreat, Hartford.*—The Nurses' Home has been completed and is occupied. It is believed that it will be efficacious in attracting and retaining a desirable class of nurses.

A double bowling alley for men has been installed, and a workshop for the men is being equipped.

ILLINOIS.—The Board of Commissioners of Cook County has under consideration the establishment of an institution for epileptic children. It is intended that it shall be for children from Chicago as well as from the county.

At a meeting of the Illinois Society of Mental Hygiene held May 7, 1912, it was decided that the society establish a hospital for the treatment of "border line" cases, and a cottage for the convalescent insane. The latter is to be situated upon some farm near to Chicago.

—*Chicago State Hospital, Dunning.*—The Illinois State Legislature in 1907-08 passed an Act "To Revise the Laws Relating to Charities," and according to section 20 of this Act, which deals with the removal of the insane and feeble-minded from county almshouses to state institutions, the Cook County Hospital for Insane was transferred by the County of Cook to the State of Illinois, arrangement for the transfer having been made by the Cook County Board of Commissioners in joint action with the State Board of Administration.

Land, buildings and equipment appraised at $1,750,000, were placed under the supervision of the State Board of Administration, and the name of the hospital changed to the Chicago State Hospital.

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Additional facilities for caring for the 2992 patients are being carried out. One cottage ward is nearing completion and two additional buildings will be under construction in a comparatively short time.

On July 1, several changes occurred in the medical staff, which has been increased until it has fifteen members.

Dr. H. Douglas Singer, Director of the State Psychopathic Institute at Kankakee, has spent several weeks with the staff, directing the organization of the medical work to conform to the standard of work maintained in the other hospitals of the state.

—*Peoria State Hospital, Peoria.*—The average daily population of this institution continues to be 2100. Recently 80 women were transferred here from the Chicago State Hospital in order to relieve the congestion in that institution.

The training school class of 1912 consisted of 11 members.

In a recent state wide competitive examination for chief nurse, held by the Civil Service Commission, two members of the class of 1909, namely, Orpha Koger and Grace Williams, ranked No. 1 and 2 respectively. Miss Alberta Dunlap, who ranked No. 3, was also for several years one of the nurses. All three of these candidates were assigned to the position of chief nurse in the state hospitals in which vacancies existed. The fact that these state hospital graduates were able to attain such high grades in an open competitive field and were immediately provided with positions by the Board of Administration has greatly stimulated interest in the training school. It also speaks eloquently of the advanced standing of the institutional personnel since the advent of the civil service.

This season's experiment of having each ward and cottage care for a colony of chickens not only proved an interesting diversion for the patients, but was a decided success otherwise. More than 2000 chickens were raised and many a palatable fry was served on the wards that had never before known the pleasure of tasting the home-grown. It is intended to retain the layers and establish an extensive egg economy. There is scarcely a cottage that has not during the summer developed some striking character among the patients caring for the chickens. On the male and female wards alike the interest has been keen. The expense was trifling as the coops were made from packing boxes and the food was limited to the refuse from the dining rooms.

The animal park now contains 14 deer, born and reared on the premises.

During the past summer, five sets of contractors were at work on the premises. A dormitory for men, which is also to accommodate the staff, is nearing completion; also a sanitary dairy barn capable of housing 100 cows. A farm colony will follow immediately, and a $50,000 reconstruction of the heating plant and a comprehensive tunnel system is almost finished.

A marked diminution of pellagra is apparent this year. Some seem to feel that the decline is due to the fact that in the epidemic of 1909, when

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more than 100 pellagrins died, most of the vulnerable material was removed.

The disease has never manifested itself in any employe of this institution or the adjacent population.

Dr. Eugen Cohn, chief of the medical staff, attended the special three weeks' course in psychiatry of Fordham University. Dr. Cohn also spent a month at the Mayo Clinic earlier in the year.

—*Kankakee State Hospital, Kankakee.*—The nursing schedule has been revised and is now based on the new two-year three months course recommended by the American Hospital Association. It is under the management of the chief nurse, Miss Mae Kennedy, a graduate of St. Joseph General Hospital, Chicago, and formerly chief nurse at Anna State Hospital. The training school classes will have seven seniors and twenty-four juniors. By providing for marks of distinction for the training school pupils it is hoped to develop a class to be envied.

The general work in the hospital wards is very active, as illustrated by the fact that there have been ten major operations within the last three months.

There has just been completed a greenhouse 23 x 122, which is to be one of four of the same size, the four to cost about $4000. The present greenhouses, many years old, are in danger of collapsing.

The improvements on Cottage No. 6 South have been completed and it now looks very much better. The population of the cottage has been increased fifteen with an expenditure of about $1500.

The alterations in the general dining room are just nearing completion. A new maple floor has been laid in white lead and thoroughly oiled, and is believed will be perfectly good for generations to come. The attached scullery floor has been laid in terrazo tile with cove base and floor drains.

A 500-horsepower Keeler boiler with attached soot blower and efficiency recorder has just been purchased, to be installed this autumn, the outfit costing somewhat less than $10,000.

The 1600 foot tunnel through the solid rock has been completed, with the exception of 20 feet. This is to be used in the contemplated reorganization of the water system, which is very faulty at present.

It is planned to begin the construction of a conduit 2000 feet long, for the installation of hot and cold water lines; steam lines and return lines and tile conduits in the walls for electric wires for lighting and power. This, with hospital labor, will cost in the neighborhood of $3500.

The contract for coal for the coming year has been let. The Bell & Zoller Company are to supply 26,000 tons of screenings at $1.66, and the Bicket Coal Company 4000 tons of mine-run at $1.87. This coal has been purchased on the B. T. U. basis, U. S. Government specifications.

An irrigation system for the lawns and several hundred acres of garden has just been completed at a cost of $1600. A Burnham pump, costing $903, has been purchased and is now being installed to operate this system.

A contract for a steel truss roof for the engine room is now being advertised; $5000 being available for the purpose.

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The state architect is now developing plans for remodeling Cottage No. 5 North, and adding to it a wing to cost in the neighborhood of $25,000. When completed this new cottage will be for the exclusive use of female employes. A dining room for pupil and graduate nurses will be a feature, also a small laundry equipment for the exclusive use of female employes.

INDIANA.—*Northern Hospital for Insane, Longcliff, Logansport.*—At this hospital a new $5000 greenhouse is under construction, a new 250 horsepower B. & W. water tube boiler is being installed and all the old buildings are being rewired.

MARYLAND.—The last legislature authorized the establishment of a hospital for the insane located on the Eastern Shore, to be known as the Eastern Shore Hospital for Insane. A site has been selected in Dorchester County and plans are being made for the buildings to be erected upon it.

—*Spring Grove State Hospital, Catonsville.*—A new wing for the accommodation of 60 patients was opened July 19, 1912, when sixty women patients were transferred from the City Detention Hospital, Baltimore.

—*Springfield State Hospital, Sykesville.*—The managers have decided to replace the superintendent's residence, the old Patterson Mansion, which was destroyed by fire several months ago, and plans are being made for the new building.

—*Rosewood Training School, Owings Mills.*—A new building containing an assembly hall seating 500 persons, several school rooms, and manual training appliances, was opened June 28, 1912, at the closing exercises of the school year. It is of grey stone construction like the others of the group and is situated to the right of the administration building. It is one of three authorized by the last legislature, and cost $75,000. The cost of excavation, a tunnel, etc., was saved by the labor of the male patients.

MASSACHUSETTS.—*Psychopathic Hospital, Brookline.*—This hospital was opened for public inspection June 21, 1912, and received its first patients two days later. Dr. Henry P. Frost of the Boston City Hospital has charge of the hospital, but Dr. E. E. Southard is its director. It accommodates 102 cases.

—*Taunton State Hospital, Taunton.*—A hydrotherapeutic room has been in use during the year and is proving a valuable adjunct in the treatment of acute cases. There are seven continuous baths which are occupied most of the time.

A solarium for tuberculous cases is proving very satisfactory, and is situated in the extension where are also located the continuous baths. This was built during the past year.

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MINNESOTA.—*State Inebriate Hospital, Willmar.*—This Hospital was opened in September under the supervision of Dr. H. A. Tomlinson.

NEBRASKA.—*Nebraska State Hospital, Ingleside.*—A new and modern equipped laboratory has been installed, and a pathologist has been added to the staff. An additional new building with 100 beds for the care of convalescent female patients has been completed. A new and modernly equipped laundry, the largest in the state, has just been opened. A new food tunnel, nineteen hundred and eighty feet long, seven feet wide by seven feet tall in the clear, and all under ground, connecting the general kitchen with all buildings (seven in number) has just now been completed, and will add very greatly to the efficiency of the service in that department. Two modern hydrotherapy departments have been opened, one in the female department of the hospital, connected with the sick ward, the other in the male department, connected with the sick ward. A new and large athletic park, with a new amphitheatre, having a seating capacity of fifteen hundred is just completed.

NEW HAMPSHIRE.—*New Hampshire State Hospital, Concord.*—The last legislature appropriated $187,500 for the erection of a new unit whose purpose is to house and care for the industrial class. The building when completed will have a capacity for four hundred and twenty-four patients. There will be an administrative section containing associate dining rooms and a kitchen, and accommodations for about fifty employes, together with quarters for a resident physician and other assistants. There will be two wings joined to the administrative portion. One of these wings will be for the men, the other for the women. The patients are to be cared for on the day room and dormitory plan, with the exception of a few rooms for certain patients. On the women's side it is proposed to install looms for rag and rug weaving in the day rooms. It is proposed also to carry on basketry, sewing, and similar industries. The building is situated about one thousand feet from the central boiler plant, and will obtain its heat and light from that department. Supplies will be issued in the ordinary way from the central storeroom. The building will probably be opened about the first of January, at which time the patients now remaining at the various county almshouses throughout the state will be transferred to it. All the insane of New Hampshire are now wards of the state, and all have been transferred but about one hundred.

A field worker has been employed at the hospital during the last year, investigating the antecedent causes as well as the environment of patients who have been committed to the institution. This work has proved of great scientific value, and it is hoped that it can be continued indefinitely. The work has also proved of value, not only in showing the etiology of insanity but in sociological interest, in that it has thrown much light on the conditions which often prevail, and have much bearing on the causation of insanity. Then, too, the work has proved of much value in assisting in the future care of patients who have been discharged. The

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field worker often comes in contact with patients who have been discharged, and can render valuable assistance to the institution as well as the patient in their future welfare.

One of the summer cottages at the colony has been utilized during the past four or five months for the care of a group of twelve or fifteen women patients who have done sewing, picked berries, and enjoyed and experienced the benefit of life in the country, while at the same time finding something to occupy their hands and minds.

Since the completion of the new boiler house the old power station is being gradually converted into an industrial building, and as far as is practical is being made fireproof, reinforced granolithic floors taking the place entirely of the wooden floors. A broom and mattress shop and paint shop have already been constructed in this building, and it is proposed as soon as possible to install other work shops for tailoring, printing, and other industries.

The training school has continued its affiliation with three general hospitals as well as with the Concord District Nursing Association. The course in training is now three years, the third year being largely devoted to clinical work in district nursing and in the general hospitals.

New Jersey.—*New Jersey State Hospital, Trenton.*—At the last session of the legislature $200,000 was appropriated for extraordinary improvements. Among the important items are: $5000 for screening windows, $15,000 for new furniture, $6500 for new boilers. $10,000 was appropriated for overhauling the old heating system in the main building, and installing a modern system of heating and ventilation. In the main part of the hospital where the heating was inadequate and defective, it has been investigated by Professor Pryor of the Stevens Institute, and the contract awarded for installing a modern system.

$15,000 was appropriated for dairy and barn equipment.

$2500 was given to continue research work, which comprises field work, studies in heredity and "after-care" work.

Facilities for admission of new patients have been entirely inadequate, and the legislature appropriated $40,000 for erecting a new admission building for female patients. Plans are being prepared, and this building will be erected in the fall.

The old laboratory has become entirely too small for the work carried on there at present. $10,000 has been appropriated for building and equipping a new laboratory. $1000 for laboratory supplies and apparatus.

For years those in charge of state hospitals have petitioned the legislature to appropriate money for the erection of either a criminal insane hospital, or a building on the state hospital grounds for the criminal insane. At the last session of the legislature $100,000 was appropriated for the erection of such a building on the grounds of the State Hospital at Trenton.

A hydrotherapeutic department has been equipped during the year.

A dental outfit has been installed, and a resident dentist appointed.

Two new farms, comprising 250 acres, were bought last year, and are

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now occupied by the hospital. It is planned to modify the buildings now on these farms to accommodate fifty patients for farm work.

Governor Wilson appointed the following new members on the board of managers: Dr. Stewart Paton, Princeton, N. J.; Professor E. G. Conklin, Princeton, N. J.; Dr. George T. Tracey, of Burlington County, and reappointed Dr. Luther M. Halsey, of Gloucester County, also J. Lyle Kinmonth of Monmouth County.

—*New Jersey State Hospital at Morris Plains.*—A sporadic case of typhoid fever developed in May, 1912, and immediately efforts were made to ascertain if any infection of the water or milk supply was responsible, and to prevent any further cases developing. As the water was found, after analyses by the State Board of Health and the hospital laboratory, to be contaminated by colon bacilli, orders were issued that none of it should be used unless it was boiled.

Following the recommendation of the State Board of Health, $3000 was asked for to buy land that was needed to protect the hospital water supply, and this amount was appropriated and the land purchased.

The hospital is fortunate in finding on the mountain side a supply of water for drinking purposes which shows a perfect analysis and is equal in all respects to the high-priced waters placed upon the market. It has been examined by experts in the laboratories of the State Board of Health, New York City and the hospital laboratory. Many drinking waters were analysed and although they were highly recommended they were found not satisfactory.

Extensive masonry work, mostly concrete, has been done about the various hospital buildings, and several houses on the hospital estate have been removed from the watershed, following suggestions from the State Board of Health.

Over seven hundred officers, employes and patients have been given typhoid vaccine; all patients under forty years were vaccinated as soon as possible.

The State Board of Health recommended the installation of hypochlorite plants for purification of the general reservoir water supply and a crematory for the disposal of garbage. A special appropriation will be asked from the next legislature for these purposes.

No other cases of typhoid fever have occurred. There is apparently no danger of any epidemic developing.

Competitive optional gardening by patients has this season been very popular, and conducive to the welfare of the patients. The work was taken up to get both male and female patients interested in outdoor occupation without supervision, voluntary and of a competitive character and it has been highly successful both as a pastime and as a therapeutic measure, many patients showing marked mental improvement and an added interest in life, and at the same time turning in daily, large quantities of high grade edible garden supplies.

As well as vegetables, large numbers of flowers are grown, which improves the appearance of the grounds, and when cut they are used to decorate the wards and patients' rooms.

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Among the vegetables raised in these voluntary cultivated and non-supervised gardens this season, up to September 1, 1912, are: One thousand and eighty-four ears of corn, thirty and one-half bushels of tomatoes, three hundred and thirty-two dozen heads of lettuce, two hundred and fifty dozen cucumbers, forty-five bushels of green beans, thirty-two and one-half bushels of string beans, six hundred and nineteen squash, and a large quantity of cabbage, onions, peas, parsley, radishes, kohlrabi, and enough cauliflower, carrots, egg plants, beets, muskmelons, peppers, turnips and rutabaga to give liberal distribution throughout the wards of patients who thus employ themselves, and frequently enable them to supply all the patients in the institution as an addition to the regular diet. And this indicates only mid-season results, for a large amount of truck farming products will be gathered from the gardens before the end of the season.

The last legislature appropriated $2500 for research work, and two field workers were employed. They aid in obtaining histories and working up tables of heredity showing what mental taint or other signs of degeneracy exist in the families of those who enter here for care and treatment.

Dr. Frederick H. Thorne is to sail for Germany late in September to study recent researches in psychopathology.

There have been no changes in the personnel of the staff during the past six months.

The hospital at present (September 1, 1912) contains 2277 patients, 677 in excess of the normal capacity. Most of the overcrowding is in the main building. The medical director has for the past three years in his report to the Governor recommended that a new hospital be built to remedy the overcrowded condition which he feels is inimical to the best interests of those under his charge.

Seventeen thousand five hundred dollars was appropriated by the state legislature at its last session for enlarging the barn and laundry.

The last legislature also granted the following appropriations for this hospital: $46,600 for wiring the main building so as to provide lighting by electricity and the purchase of necessary fixtures; $10,000 to enlarge the female nurses' home; $10,600 for furnishings for the new home for male nurses, the tuberculosis pavilion and the new fire department house; $17,500 for painting the interior of the building and some much needed alterations to the fourth floor to increase the light and ventilation; $4000 for continuous baths; $8000 for a workshop for patients, and $26,000 for a new boiler plant, and necessary work to properly install the same. More steam is necessary for heating the numerous buildings recently built and for generating the electricity from new dynamos lately installed. Most of these appropriations become available after October 1, and only a few of the contracts have been awarded as yet, though the state architect has been in frequent conferences with the hospital authorities in connection with them.

The new fire house is completed and occupied.

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The tuberculosis pavilion is completed and awaits furnishing before occupation.

The male nurses' home is nearly completed.

The greenhouses are being enlarged.

Every window throughout the hospital buildings is now screened and the housefly is almost a novelty.

A large number of the patients resented in a vigorous manner the putting of screens to the windows, contending that iron bars were bad enough but wire screens were an absolute insult. They claim that the wire screens seriously interfere with their feeding the birds and stray dogs and that they are specially inconvenient to the users of chewing tobacco.

The contractor for the new kitchen at the main building has not completed it according to the contract and specifications and the board of managers, after consultation with the attorney-general, have determined to dismiss the contractor, have the work promptly and properly completed and charge the cost to the delinquent contractor.

A number of the wards for male inmates are being painted by patients. This is followed by added comforts and better health of those occupying them.

The parochial priest at Morris Plains for several months has sought, in what has seemed an officious manner, to dictate to the hospital authorities relative to religious services. At present he has, in rotation with the Episcopalians, Presbyterians, Methodists and Baptists, a service every fifth Sunday, and in addition celebrates Mass every Tuesday morning. It was agreed years ago, that this latter Sacrament would be celebrated gratuitously by the priest, the hospital authorities according the use of the chapel and every facility required for the service, but the present incumbent asked for, and was granted, $7 a service—the same as is allowed for the Sunday services. He demanded that he should be allowed to celebrate Mass every Sunday morning, with the right of taking up a collection from patients and employes, which has not been the custom in the state institutions for the insane of New Jersey. Equal representation with equal remuneration has been the policy of the managers. The board of managers did not grant the demands, and this was followed by public attacks from the altar denouncing officials of this hospital and advising all communicants of his church to leave the employ of the hospital.

NEW YORK.—By legislative enactment the name of the State Commission in Lunacy has been changed to the State Hospital Commission, it being desired to abandon the use of the word "lunatic."

—*Willard State Hospital, Willard.*—Scarlet fever became epidemic to some extent in March, April and May. Altogether, there were fifteen cases. Fourteen of the cases were women, ten of whom were attendants. Several had severe complications, but all eventually recovered. There were three cases of diphtheria, two of measles and three of facial erysipelas during the spring months.

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Fourteen members of the senior training class passed the final examinations and will graduate as nurses.

A contract is about to be awarded for the construction of a sewage disposal plant, for which the sum of $45,000 was appropriated last year. The state architect is preparing specifications for an addition to the laundry, to be used as a sorting room. According to the recommendations of the state fire marshal, additional fire escapes are to be erected at the administration building, known as Chapin House, and at several of the buildings occupied by employes, where such safeguards will be desirable. New special machinery has been added to the equipment of the laundry. New concrete retaining walls are being erected at the coal trestles, to keep the coal supply piled up more compactly. New tile floors are to laid in the dining-rooms for patients at The Maples, replacing old wooden floors. The largest new construction work is a barn, 134 x 36 feet, which is in course of erection. This will contain stanchions for 60 cows and space overhead for hay and grain.

—*St. Lawrence State Hospital, Ogdensburg.*—The calisthenic class and the class for the re-education of dementia præcox cases continue as before.

Studies leading to a better understanding of the clinical symptom picture and the differential diagnosis of general paresis, cerebral syphilis, and allied conditions are being made. Considerable pathological material is being collected and classified.

The State Conservation Commission has kindly consented to allow the establishment of a summer camp at Lotus Island, located in the St. Lawrence River, seven miles below the hospital buildings. The patients look forward with considerable pleasure to the camping trips. Each party remains at camp for two weeks. Physical, and frequently mental, improvement occurs in recoverable cases, and the chronic hospital resident is, in addition, given a needed vacation.

In accordance with suggestions from the state fire marshal, additional fire protection, especially new fire exits and fire escapes, etc., has been provided.

—*Manhattan State Hospital, Ward's Island.*—The following is a list of improvements made since the issue of the last copy of the summary:

A concrete property vault for patients' valuables, etc., has been constructed.

The leaded glass in Dining Room No. 15 was replaced with new steel sash.

Three sets of metal standards and shelves have been installed in food supply room, Kitchen No. 5.

The construction of additional accommodations for tubercular patients, and installation of plumbing, heating and electric lighting at a cost of $10,000 is practically completed.

Tin and galvanized gutters, leaders and valleys have been replaced with copper on the roofs of Wards 41, 42, 43, 54 and 55, and the shingle roofs on Camps C and D have been replaced with proslate.

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The interior of Wards 38, 39, 40, Kitchen No. 4, Staff House, Female Home and Camp Dent, the interior of the new building and of the city dock have been painted.

The Male Home West has been rewired and wires have been replaced in the conduit, between the basement of Ward 49 and the Annex Dining Room.

The following improvements are now under way:

Extension to the electric lighting plant.

Installation of electric wires in underground conduits.

Heating system in Female Employes' Home.

Extension of roads and cement walks.

Rebuilding of the third story of the building occupied by the Psychiatric Institute.

The residence recently constructed for the use of the director of the Psychiatric Institute has been completed and is now occupied by Dr. August Hoch and his family.

The hospital sustained a loss by fire of part of the Verplanck Building, which has been used as the Psychiatric Institute. The following is quoted from the report made to the State Hospital Commission at the time of this event:

"At about 10 o'clock, on the evening of July 3, flames were seen coming from the third story of the Psychiatric Institute, which is not under the management of the Manhattan State Hospital. An alarm was immediately turned in, and in a very few minutes the hospital fire department had streams on it. The city fire department was notified and responded with three fire boats and two fire engines, the latter having been brought up to the Island by the steamer 'Thomas S. Brennan,' belonging to the Department of Charities of the City of New York.

"The patients, over four hundred in number in the Verplanck Building, which is connected with the Institute Building, were taken from their wards and sent to Cottages A, B, C and D, and to the Assembly Hall, where they were made as comfortable as possible during the night. There were two reasons for removing the patients: 1st: To keep them from getting into a panic as the flames were distinctly discernible from the wards. 2d: To remove them from any possible danger owing to the close proximity of the fire.

"The employes of the hospital responded nobly to calls made upon them, and were also assisted by twelve police from New York."

As noted above, the third story of the building, which was completely destroyed, is now being rebuilt. The Institute sustained a heavy loss in the library, and the books in many instances will be difficult to replace. It has been impossible to definitely decide the source of the fire.

—*Kings Park State Hospital, Kings Park, Long Island.*—Group Three was opened for the reception of 350 male infirm, chronic idle, and working patients on April 9.

Pavilions for the reception of 250 tubercular patients, 50 men and 200 women, are under construction.

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Extensions to the staff's and clerks' dining rooms at A-B Kitchen are under construction.

A number of new wells are being driven, two of which are ready, over 400 feet deep, each discharging over 200,000 gallons daily.

An auto truck has been purchased and is proving to be an economical purchase, doing the work of several teams in distributing supplies to the more distant portions of the hospital.

An auxetophone has been purchased and by this means several very enjoyable concerts have been given.

A moving picture machine has been purchased and is now being installed.

A new record has been made in the extension of occupation for patients. Taking at random the date of August 21, the reports show that 70.4 per cent of all patients on the male side and 44.9 per cent on the female side, were employed at useful occupations on that day. Further extensions are deemed possible before the irreducible residue of infirm patients confined to their beds is reached.

—*Rochester State Hospital, Rochester.*—A cottage for contagious diseases is under construction. It will accommodate sixteen patients.

—*Hudson River State Hospital, Poughkeepsie.*—A detached building, formerly a part of Inwood service, has been renamed "Edgewood" and the wards, 25 to 29, have been numbered 40 to 45.

During the last legislative session the legislature appropriated sufficient money to enable the hospital to acquire the Winslow Farm, the adjoining property on the south. This is very desirable land and constitutes a much needed addition to the hospital farming facilities.

It is planned to extend the water equipment of the hospital. A large sedimentation basin is to be built at the river in connection with the filter beds with a 12-inch line to the main reservoir and an 8-inch line to the Cottage Department, two and a half miles distant. A large storage reservoir on the Cottage hill will supply sufficient pressure throughout the whole hospital. The results of competitive bidding will soon be announced and work will then begin.

Additions to the structural equipment of the hospital include two wards for forty disturbed patients at Edgewood to be known as Wards 46 and 47. The work is progressing rapidly and the building will be ready for occupancy in a few months.

The Reception Hospital, opened in 1908, has never been entirely satisfactory because there was no adequate provision for disturbed patients. To meet this defect two additions are to be built, which it is hoped will completely separate the noisy patients and prevent them from disurbing other patients.

The trolley line, which a year or two ago replaced the old steam railroad, and communicates with the City of Poughkeepsie three miles away, is about to be extended to the north, and visitors to the hospital instead of being discharged at the rear will now be brought to the front entrance. Tracks are being laid and the station is soon to be built. The change represents a desirable improvement.

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—*Matteawan State Hospital, Fishkill-on-Hudson.*—During the past year the classification used in the state hospitals has been adopted, and state hospital methods, so far as they have been applicable, have been instituted.

Rugs have been placed on the wards, pictures on the walls, new office furniture installed, two new floors were laid replacing the old floors on the wards, and a new floor has been laid in the administration building.

The infirmary building, for the completion of which an appropriation was obtained from the last legislature is under way. This will provide two new wards for women and it is hoped to have it completed and ready for use in the early spring.

A new cold storage building has been allowed and plans and specifications are practically completed for the same.

A small room has been added to the kitchen for use as a scullery.

The dairy barn has been finished and equipped and a new milk house is in process of construction.

Plumbing renewals to the amount of $2500 are to be installed and a new fire alarm system partially covering the institution will be installed at an early date.

New fencing has been allowed for the farm and electricity has been carried to the farm barns, farmer's house and other out buildings.

—*Binghamton State Hospital, Binghamton, N. Y.*—Improvements at this hospital during the past summer have been made in many directions, but no large structures have been erected. Appropriations have been obtained for the complete renewal of the electric lighting system, the enlargement of the laundry and an addition to the bakery, but the plans for these improvements have not been fully completed.

At the tuberculosis pavilion, Edgewood, the dining-room has been enlarged by the addition of a veranda at the south end which forms part of the dining-room and which, in winter, will be enclosed with glass. The toilet section in connection with Ward 8 of the North Building has been remodeled and increased in size; a tile floor has been laid and new plumbing fixtures installed.

In conformity with the requirements of the state law for protection against fire, nearly all doors in the hospital leading from the wards to the fire escapes and other exits have been made to swing outward to avoid the possibility of being jammed shut in case of panic. Additional fire equipment has been provided, the principal apparatus consisting of a combination chemical and hose wagon fitted with the regulation drop harness so that a horse may be quickly attached. Fire escapes have been constructed on the nurses' home, Ferris Hall, and provision has been made for similar escapes on the staff house, the bakery building, and all of the farm cottages.

At the summer camp for convalescent patients, known as "Pine Camp," rustic frame structures with canvas sides have replaced the dormitory and dining-room tents. These structures are much more attractive in appearance than the tents and afford more thorough protection in case of storm or cold weather. The camp has been occupied all summer by from

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thirty to forty women patients who have been detailed from the wards for periods varying from two to three weeks. Besides the regular residents of the camp it has been the practice to send a wagonette to the camp daily with a half dozen patients and a nurse, who, after spending the day on the river bank, return to the wards for the night.

The annual Field Day for patients and employes was held on the ball ground near the main hospital building on Thursday, August 29. On this occasion a moving picture machine was made use of to record some of the events. Many events of daily hospital life were also recorded on the moving picture film, which was later exhibited at the State Fair at Syracuse, N. Y., for the purpose of showing to the public the various industrial activities carried on by the patients in our state hospitals, and also some of their amusements.

—*Buffalo State Hospital, Buffalo.*—September 6, 1912, there was held at this hospital a conference of the State Hospital Commission, managers of state hospitals, and superintendents, with the following program:

1. Psychopathic hospitals, dispensary treatment and after-care of the insane. By Hon. Homer Folks, Secretary State Charities Aid Association, New York. Read by Mr. E. S. Elwood, Assistant Secretary to Committee on Mental Hygiene.

2. Report of Committee on Revision of Rules and Regulations for the Guidance of Officers and Employes of the State Hospitals. Dr. William Mabon, Chairman.

3. Discussion of the retirement of medical officers; should a retirement fund be established for officers.

4. Further amendments to the Insanity Law.

5. Promotion examinations for first assistant physician, senior assistant physician and superintendent. Discussion of relative weights to be assigned to written examination; practical examination; education, general and medical; experience; efficiency record; personal qualifications; scientific attainments; administrative ability, etc. By Dr. August Hoch, Director Psychiatric Institute.

6. Reports of Committees.

Plans and specifications are being prepared by the state architect, and upon their completion, the work of erection will be begun of a tuberculosis pavilion for men, a refrigerating plant, and a bakery.

The contagious disease building is well under way and it is expected will be ready for occupancy this winter.

Contract has been let for the installation of an electric water-purifier at a cost of $3900.

Bids have been received for the installation of a forty-four foot railroad track scales at a cost of $1375, including the concrete foundation, etc.

—*Bloomingdale Hospital, White Plains.*—The medical staff has been increased by two physicians, making the total eight.

The laboratory equipment has been increased and the room improved.

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A room has been fitted up with psychological apparatus.

A chief supervisor of nursing and nurse training has been appointed with a view of improving the nursery service, and the training of attendants and nurses.

A full equipment for the more efficient use of prolonged baths has been installed.

The organization for treatment by occupations has been elaborated. A director of occupation for the men has been appointed and shops have been fitted in the gymnasium building. Four women are now employed in the occupation department.

A director of physical training has been employed for both men and women.

The cottage which was built last year on the shore of Long Island Sound, has been utilized with good results during the summer. There is room for nine patients. Parties go over for the day.

The laundry equipment has been almost entirely replaced with modern machinery.

A new dining-room for the use of the nurses is about to be constructed.

A dairy building has been added to the farm buildings with a view to the production of pure and clean milk.

The electric lighting equipment is being overhauled throughout the hospital.

Considerable new furniture and carpets have been purchased and much of the interior of the buildings has been repainted. Other improvements are contemplated and the Board of Governors has appropriated $100,000 with this in view.

—*Craig Colony for Epileptics, Sonyea.*—Beech and Birch, two cottages in the Village Green Group for males, have been replastered.

A new two-story brick dormitory of fireproof construction is well under way. It is to replace a four-story frame structure formerly used by the Shakers and will accommodate sixty male patients. It is to cost $40,000, without furnishings.

A new brick central school building is under course of construction to be finished about January 1, 1913.

Stand pipes and hose reels have been placed in 15 buildings formerly without them.

The last legislature appropriated $22,000 for a new cold storage plant; $15,000 for a new water softening and filtration plant; $5000 for a new barn; $5000 for finishing the third floor of Spratling Hall, the executive building, to provide additional quarters for officers, etc. $10,000 is available for the purpose of constructing four cottages for married employes. The state architect is preparing plans for these items.

A special teacher of arts and crafts has been added to the teaching force.

The following equipment is being added to the colony laundry:

One 48 x 120-inch flat work ironer, one 30-inch collar and cuff ironer, one metallic truck dry room, one metallic 37 x 64-inch washer, four 28-

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inch solid curb extractors, two safety covers for old extractor, one 22-inch starch extractor, one ladies' cuff press, one spray dampener, one collar shaper, one hot tube shaper, one edger, one dampening press, one 36-inch reverse body ironer, one curtain truck, one air compressor.

The following items are improving the colony:

One belt driven crusher, four 1000-pound capacity soap frames, four extra bottoms for soap frames, one soap pump, one foot press, one cutting table, one slabber, etc.

It is intended that the colony will make all soap required for its own use.

PENNSYLVANIA.—*State Hospital, Warren.*—The medical staff has been increased by two additional members, and through the kindness of Dr. Davenport of the Eugenics Record Office, Cold Spring Harbor, L. I., a field worker in eugenics will begin duties immediately.

—*State Hospital for the Insane, Norristown.*—The $10,000 which was appropriated by the legislature in 1911 for the establishment of the hydrotherapeutic plant for the male department is being expended this summer and a small brick building for the purpose of containing the necessary apparatus is being rapidly constructed. The second floor of the building will be used for a solarium and some electrical appliances.

In front of the administration building a small office building is being constructed for the use of the chief physicians and their office force. The first floor will be devoted to offices, record rooms, etc., together with a reception room for visitors having business with the physicians. The second floor will be devoted to the medical library and an assembly room for the physicians for staff meeting purposes, etc.

The arts and crafts department continues to be very active. Carpenter work is being added to the other industries.

—*Eastern Pennsylvania State Institution for the Feebleminded and Epileptic, Spring City.*—The erection of a power house and laundry building has been going on recently. In the former there will be some cold storage facilities. In the latter, besides a complete plant, there will be a sewing room, mending room, shoe shop, tailor shop, etc.

Some work has been done in laying out the grounds, although a meagre appropriation did not permit of very much being done.

There are now 460 patients.

A training school course of two years will be started in October.

—*State Hospital for Criminal Insane, Fairview.*—It is announced that this hospital will be ready for occupancy October 15, 1912.

—*State Insane Hospital, Rittersville.*—This hospital was formerly opened July 25, 1912, but was not then ready to receive patients.

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RHODE ISLAND.—*State Hospital for the Insane, Howard.*—The Reception Hospital for the reception and first care of newly committed cases was opened for patients May 28, 1912. This building, which is one unit of the plant which comprises the Hospital for the Insane at Howard, is a complete hospital in itself, practically speaking. It is located at a little distance from the main group of buildings and has its independent kitchen, corps of domestic employes, nurses and physicians, with living quarters for the same. The building has 184 beds for patients and accommodations for 40 employes. The offices and employes' quarters are in the center of the structure; the patients are in two wings, one for men and one for women.

The building has a surgical operating room section and is also equipped for hydrotherapy.

Plans for a laundry building have just been completed. The structure will be of one story, 200 feet by 80 feet, with a monitor roof.

TEXAS.—*State Lunatic Asylum, Austin.*—The completion of a male hospital and the building of a cottage for old and infirm women patients at an early date is contemplated.

—*Southwestern Insane Asylum, San Antonio.*—It is the earnest effort of the management to emphasize the hospital idea and to impress upon every patient admitted, that they are here for treatment.

There are two convalescent squads, one of men, the other of women. These are placed in charge of the best attendants and sent out in the country with instructions to seek new scenes and find new means of diversion. The nurses are relieved of everything suggestive of a hospital, or that would attract attention. It is found that this proves very beneficial and many have been aided by it to recovery.

A new hospital building with a capacity of one hundred beds will be completed in a few weeks. In this building all acute male cases will be received, and also the cases of acute sickness among the men will be treated here.

The main idea is to give individual treatment to acute cases.

A new dairy barn with 100 stalls has recently been constructed which is sanitary in every respect.

VIRGINIA.—*Central State Hospital, Petersburg.*—The legislature increased the appropriation for support $12,000 per year, the amount now being $160,000. Appropriations were also made to increase the capacity of the institution so as to relieve to a considerable extent the crowded condition. Funds were also provided for improving and making more efficient the heating system, for which contract has been awarded for $12,000; putting in a modern sewage disposal system, or rather constructing a sewer line to the river, a mile away, for which contract has been let for about $9000, and the construction of new stables, barns, etc., which is being done by the hospital force. It is also intended to construct a new pavilion

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for female tuberculous patients, located several hundred yards from the main plant. Concrete floors and more modern plumbing have been put in a number of bath rooms and toilets. A sub-surface irrigation system of sewage disposal has been installed at the colony for male tuberculosis patients. A building for the criminal insane and persons under charge for crime, sent by the courts for observation, etc., was completed and occupied last year. This building will be enlarged so as to accommodate about sixty patients. At present there are 1500 patients in the institution. No insane are in any jails or almshouses of the state.

Special efforts are being made to procure more definite and reliable information regarding the causes of insanity and degeneracy in the negro. With this aim in view there has been employed for the summer months an assistant physician, formerly pathologist here, who is devoting practically his entire time to the collection and analysis and classifications of facts regarding the family history, environments, etc., of nearly a hundred patients. A number of other cases will be investigated along these sociological lines. The prevalence of syphilis among the patients in the hospital is also being worked out as far as possible by the Wassermann test, etc.

The legislature provided for enlargements and improvements at all five of the state hospitals, and increased the annual support funds of each. At the Colony for Epileptics, near Lynchburg, a separate department for feeble-minded women was established. The total amount appropriated for all the institutions and the care of the insane for the next two years was $1,252,666.

—*Western State Hospital, Staunton.*—There is at present under construction a new building for noisy patients which is expected to give great comfort to the other patients. The building is 170 feet long and contains 96 small rooms. It is built of brick and is finished inside with cement. Its cost will be about $10,000 and is being built largely by the labor of patients.

An infirmary containing 100 beds was completed during the past year, and a large solarium has been added to it.

WASHINGTON.—*Eastern Hospital for Insane, Medical Lake.*—The name of this hospital has been changed from "The Eastern Washington Hospital for the Insane" to "The Eastern Hospital for the Insane."

Two new fireproof wings each containing 100 patients, reported under construction in a previous report, have been completed. One of the wings has been erected for the care of criminal insane and therefore made much more secure than ordinary buildings. It has a separate dining-room so that patients need not leave the building when going to their meals. This building is wholly detached from the others.

PORTO RICO.—*Insane Asylum, San Juan.*—There are at present in this hospital 340 patients, 140 men and 200 women. Of the latter 23 are pay patients, and of the former 20. Uncinariasis is the chief cause for insanity

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here, but the prognosis in cases due to this is favorable. There have also been a number of cases under care which were caused by pellagra. The mortality rate for the past year was 9 per cent.

The staff is composed of Dr. G. Curbelo, superintendent, and Drs. E. Font Guillot and Anita Janer, assistant physicians.

ONTARIO.—*Hospital for the Insane, Brockville.*—During the last year the hydrotherapeutic equipment of this institution has been completed, so that there is now all the modern means for the treatment of patients by this method. The patients are receiving a great deal of benefit, not only from the continuous baths but from the needle and rain spray, combined with the Scotch douche. These are used also in combination with the hot air cabinet, and in many cases this treatment is quite efficacious. Massage is also of great benefit in many cases.

Careful physical and blood examinations are made of each newly admitted patient, and when hydrotherapeutic treatment is advisable it is carried out to its fullest extent.

During the past year a farm of about three hundred acres has been bought, and is being managed in connection with the present institution. The farm is situated at a distance of two miles, but it is already apparent that it will be of great benefit, not only in providing helpful work and exercise that is required but in furnishing many of the articles that are required for daily use. About twenty patients are now housed at this new farm, and the expectation is that a suitable building will be provided there in the near future, when fifty patients will live at this point.

A new admission hospital has been planned and is in course of construction. This will not be completed for some eighteen months, but when finished will greatly assist the work. The building is to be fireproof, and finished with all modern means for treatment and care of both the sick and insane. A first class operating room will be installed when this building is finished. It will accommodate from sixty to eighty patients.

The skating rink is being enlarged, so as to make much more room for the skaters and provide two excellent curling rinks.

QUEBEC.—*Protestant Hospital for the Insane, Montreal.*—Owing to the generosity of Dr. James Douglas, a new amusement hall has been erected at a cost of about $50,000.

It is a one-story stone and brick fireproof structure, capable of accommodating six hundred patients, with stage, dressing-rooms, lavatories, etc., and a basement containing a small kitchen and supper-room, so that friends who voluntarily entertain during the winter months may not go away hungry. The heating plant used is the "Webster System" which has given the greatest satisfaction in other parts of the premises. It will be known as the Douglas Memorial Hall.

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Appointments, Resignations, Etc.

ADAMS, DR. GEO. S., Superintendent of Westborough, Mass., State Hospital at Westborough, Mass., resigned May 20, 1912, to be Medical Superintendent at a private sanitarium at Stamford, Conn.

ALDEN, DR. JAMES M., formerly Superintendent of Norfolk Insane Asylum at Norfolk, Neb., died at the Methodist Hospital at Omaha, May 3, 1912.

ANDERSON, DR. JOHN B., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., July 27, 1912.

ASPER, DR. BURT J., Assistant Physician at City Detention Hospital at Baltimore, Md., appointed Clinical Assistant at Sheppard and Enoch Pratt Hospital at Towson, Md., May 15, 1912, and resigned October 1, 1912, to be Instructor in Clinical Microscopy at the University of Maryland.

BARNES, DR. FRANCES M., JR., Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician, April 1, 1912.

BARRY, DR. R. GRANT, appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., June 7, 1912.

BELL, DR. CLARENCE R., Assistant Physician at Elgin State Hospital at Elgin, Ill., appointed First Lieutenant, Medical Corps, U. S. A.

BINNIE, DR. HELEN A., Medical Interne at Government Hospital for the Insane at Washington, D. C., resigned April 5, 1912.

BISHOP, DR. HARRY A., appointed Junior Assistant Physician at New Jersey State Hospital at Trenton.

BLAUVELT, DR. J. H., appointed Medical Interne at Matteawan State Hospital at Fishkill-on-Hudson, N. Y.

BOUDREAU, DR. EUGENE N., appointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., July 1, 1912.

BOWERS, DR. WALTER G., Fourth Assistant Physician at Department for Men at State Hospital for the Insane at Norristown, Pa., appointed Superintendent of Schuylkill County Hospital for the Insane, September 1, 1912.

BOWMAN, DR. MARY R., Medical Interne at Kings Park State Hospital at Kings Park, N. Y., promoted to be Junior Physician, June 1, 1912, and Assistant Physician, July 1, 1912.

BRITTON, DR. CHARLES POTTS, formerly Assistant Physician at New Jersey State Asylum at Trenton; died at his summer home at Bushkill, Pa., March 29, 1912, from cerebral hemorrhage, aged 66.

BRUSH, DR. EDWARD N., Superintendent of Sheppard and Enoch Pratt Hospital at Towson, Md., took a trip abroad during August.

BUHRMAN, DR. E. RAY, appointed Assistant Physician at New Jersey State Hospital at Trenton.

BUIE, DR. J. S., appointed Assistant Physician at North Texas Hospital for the Insane at Terrell.

BUNKER, DR. SIDNEY M., appointed Assistant Physician at State Hospital for the Insane at Howard, R. I.

CAMPBELL, DR. MICHAEL, Superintendent of Eastern Hospital for the Insane at Bearden, Tenn., was struck by a rock thrown by a patient, June 30, 1912, and suffered a fracture of the skull.

CARRIEL, DR. HENRY B., Superintendent of Jacksonville State Hospital at Jacksonville, Ill., married September 3, 1912, to Dr. Joy Ricketts, recently Assistant Physician at Peoria State Hospital at Peoria, Ill.

CARSON, DR. JAMES C., Superintendent of State Institution for Feeble-Minded Children at Syracuse, resigned after 27 years service.

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CHAMBERS, DR., appointed Superintendent of Selkirk Hospital for the Insane at Selkirk, Manitoba.

CHILD, DR. H. T., appointed Night Physician at Kankakee State Hospital at Kankakee, Ill.

CLARKE, DR. F. B., appointed Assistant Superintendent and Acting Managing Officer at Chicago State Hospital at Dunning, Ill.

CLOUD, DR. R. E., Assistant Physician at North Texas Hospital for the Insane at Terrell, resigned.

COATES, DR. EVERETT H., appointed Assistant Physician at Westborough, Mass., State Hospital August 17, 1912.

COBB, DR. O. HOWARD, appointed Superintendent of State Institution for Feeble-Minded Children at Syracuse, N. Y.

COLES, DRS. W. W. and R. B., Assistant Physicians at Westborough, Mass., State Hospital, resigned July 31, 1912, to open a private sanitarium at Keene, N. H.

CONZELMANN, DR. FRED J., appointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., September 1, 1912.

DARLING, DR. IRA A., appointed Assistant Physician at Warren State Hospital at Warren, Pa.

DAVIDIAN, DR. HAGOP, appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., July 13, 1912.

DIEHL, DR. J. ERNEST, Junior Assistant Physician at New Jersey State Hospital at Trenton, promoted to be Assistant Physician.

DOYNE, DR. C. R., appointed Assistant Physician at State Hospital for Nervous Diseases at Little Rock, Arkansas.

DUNNING, DR. RALPH H., appointed Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., July 5, 1912.

EBERLIN, DR. CHARLES, Assistant Physician at Chicago State Hospital at Dunning, Ill., transferred to the Cook County Infirmary at Oak Forest, Ill.

ECKEL, DR. JOHN L., returns to his duties at Buffalo State Hospital at Buffalo, N. Y., October 1, 1912, after a year spent in psychiatric study in Germany.

EVANS, DR. MARY L., Assistant Physician at New Jersey State Hospital at Trenton, resigned to take up private institution work in the West.

EVARTS, DR. ARRAN B., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., July 23, 1912.

FAY, DR. EMMA H., appointed Assistant Physician at Westborough, Mass., State Hospital June 6, 1912.

FIDLER, DR. EDWARD, Pathologist to the Hospital for the Insane at Hamilton, Ontario, appointed Professor of Bacteriology on the newly organized staff of the School of Preventive Medicine at London, Ontario.

FIFE, DR. FRANK, formerly Assistant Superintendent of Dayton State Hospital at Dayton, Ohio, died at his home in Dayton, from uremia, June 29, 1912, aged 47.

FINLAYSON, DR. ALAN D., Assistant Physician at Danvers State Hospital at Hathorne, Mass., resigned and appointed Assistant Physician at Warren State Hospital at Warren, Pa.

FLETCHER, DR. CHRISTOPHER, Assistant Physician at Willard State Hospital at Willard, N. Y., transferred as Second Assistant Physician to Buffalo State Hospital at Buffalo, N. Y., and promoted to be Senior Assistant Physician, May 1, 1912.

FOLSOM, DR. RALPH P., Assistant Physician at Manhattan State Hospital at Ward's Island, N. Y., promoted to be Senior Assistant Physician, June 1, 1912.

FOX, DR. HAROLD H., appointed Medical Interne at Rochester State Hospital at Rochester, N. Y., June 6, 1912.

FREEMMEL, DR. H., appointed Interne at Chicago State Hospital at Dunning, Ill.

FREEMMEL, DR. I. J., Assistant Physician at Elgin State Hospital at Elgin, Ill., transferred to Chicago State Hospital at Dunning, Ill.

FURMAN, DR. I. J., appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., July 15, 1912.

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GIVENS, DR. AMOS J., Proprietor of Givens Sanitarium at Stamford, Conn., received the degree of Doctor of Laws at the eighty-first annual commencement of Wesleyan University, held June 19, 1912, at Middletown, Conn.

GLUECK, DR. BERNARD, Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician, April 1, 1912.

GOODSON, DR. JOSEPH A., appointed Superintendent of Eastern Kentucky Hospital for the Insane at Lexington, Ky.

GRAU, DR. LEROY C., Special Medical Attendant at Manhattan State Hospital at Ward's Island, N. Y., promoted to be Medical Interne, June 3, 1912.

GUTH, DR. MORRIS STANLEY, formerly Superintendent of Warren State Hospital at Warren, Pa., died suddenly in Erie, Pa., March 27, 1912, from heart disease, aged 60.

HAYES, DR. EDNA, appointed Assistant Physician at Peoria State Hospital at Peoria, Ill., August 1, 1912.

HAVILAND, DR. C. FLOYD, First Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., granted leave of absence from April 1 to July 20, 1912, to take a trip through Europe.

HOPKINS, DR. MAY AGNES, appointed Assistant Physician at Warren State Hospital at Warren, Pa.

HORNOR, DR. HARRIET, appointed Assistant Physician at Westborough, Mass., State Hospital September 1, 1912.

IMRIE, DR. J. G., appointed Assistant Physician at Protestant Hospital for the Insane at Montreal, Quebec, August, 1912.

IVEY, DR. WILLIAM PORSONS, formerly Assistant Superintendent of Morganton State Hospital at Morganton, N. C., died at his home in Lenoir, June 28, 1912, from cerebral hemorrhage, aged 55.

KING, DR. EDGAR, U. S. Army Surgeon, assigned to duty at Government Hospital for the Insane at Washington, D. C., June 26, 1912.

KNAPP, DR. ROY O., Chief Physician at State Reformatory at Ionia, Michigan, resigned to become First Assistant Superintendent at State Asylum at Ionia.

KLOOP, DR. HENRY I., Assistant Superintendent of Westborough State Hospital at Westborough, Mass., resigned March 22, 1912, to be Superintendent of State Homeopathic Hospital at Allentown, Pa.

KOLB, DR. F. GASTON, Assistant Physician at Warren State Hospital at Warren, Pa., resigned.

LANG, DR. W. E., appointed Assistant Physician in charge of the Male Department at Rittersville State Hospital at Rittersville, Pa.

LAWLESS, DR. ROBERT F., appointed Special Medical Attendant at Manhattan State Hospital at Ward's Island, N. Y., March 26, 1912, and resigned, June 6, 1912.

LISOR, DR. G., appointed Assistant Physician at Chicago State Hospital at Dunning, Ill.

LOVELL, DR. JOHN F., appointed Assistant Physician at Westborough, Mass., State Hospital, March 8, 1912, and resigned October 1, 1912, to be Pathologist at Norwich State Hospital at Norwich, Conn.

LOWE, DR. CHAS. R., formerly on the staff of the Michigan Psychopathic Institute at Ann Arbor, Mich., appointed Assistant Physician at Kankakee State Hospital at Kankakee, Ill.

LYON, DR. DARWIN O., appointed Assistant in Psychology at Kings Park State Hospital at Kings Park, N. Y., June 5, 1912, and resigned July 30, 1912.

MCKINNISS, DR. C. R., First Assistant Physician at Department for Men at State Hospital for the Insane at Norristown, Pa., promoted to be Chief Physician.

MACLEAN, DR. KENNETH T., appointed Assistant Physician at Hospital for the Insane at Hamilton, Ontario.

MAHONEY, DR. WILLIAM J., appointed Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., June 15, 1912.

MALONEY, DR. THOMAS W., Medical Interne at Craig Colony for Epileptics at Sonyea, N. Y., resigned September 15, 1912, to enter private practice in Geneva, N. Y.

MANN, DR. HERBERT C., Medical Interne at Buffalo State Hospital at Buffalo, N. Y., resigned September 1, 1912, to enter private practice.

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MARSHALL, DR. WM. A., Assistant Physician at Hospital for the Insane at Hamilton, Ontario, transferred to Mimico, Ontario.

MAY, DR. JAMES V., Superintendent of Matteawan State Hospital at Fishkill-on-Hudson, N. Y., appointed President of State Hospital Commission at Albany, N. Y., January 1, 1912.

MOENCH, DR. GERHARD L., Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., promoted to be Junior Physician March 21, 1912.

MOORE, DR. ROY S., appointed Medical Interne at Buffalo State Hospital at Buffalo, N. Y., June 15, 1912.

MURRAY, DR. W. G., appointed Assistant Physician at Kankakee State Hospital at Kankakee, Ill.

MURPHY, DR. DENNIS J., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., August 12, 1912.

NAGEL, DR. FLORA, appointed Resident Dentist at Kings Park State Hospital at Kings Park, N. Y., May 5, 1912, and resigned July 28, 1912.

NEFF, DR. EDWARD A., appointed Assistant Physician at Brigham Hall at Canandaigua, N. Y.

NEIL, DR. THOMAS F., appointed Assistant Physician at Watertown State Hospital at Watertown, Ill.

PAFFARD, DR. H. T., appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., May 27, 1912.

PATTERSON, DR. W. L., appointed Assistant Physician at Westborough, Mass., State Hospital February 7, 1912, and resigned to be Assistant Physician at Fergus Falls Hospital, at Fergus Falls, Minn., April 5, 1912.

PAYNE, DR. GEORGE C., appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., July 1, 1912.

PELL, DR. GLENN, appointed Dentist at Northern Hospital for the Insane at Logansport, Ind., July 5, 1912.

PEREZ, DR. VINCENT, appointed Resident Dentist at New Jersey State Hospital at Trenton.

PETERS, DR. H., appointed Assistant Physician at Chicago State Hospital at Dunning, Ill.

PIERCE, DR. REUEL A., appointed Assistant Physician at Westborough, Mass., State Hospital June 13, 1912.

PIETROWICZ, DR. S. R., Superintendent of Chicago State Hospital at Dunning, Ill., resigned July 1, 1912, to resume general practice.

PODALL, DR. H. C., appointed Fourth Assistant Physician at Department for Men at State Hospital for the Insane at Norristown, Pa.

PORTER, DR. WILLIAM C., Second Assistant Physician at Napa State Hospital at Napa, Cal., appointed Assistant Physician at Hudson River State Hospital at Poughkeepsie, N. Y., October 1, 1912.

QUACKENBUSH, DR. FRANK, Visiting Dentist at Kings Park State Hospital at Kings Park, N. Y., resigned April 30, 1912.

REID, DR. EVA C., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Assistant Physician April 1, 1912.

RENDER, DR. W. E., Second Assistant Physician at Hopkinsville State Hospital at Hopkinsville, Ky., temporarily transferred as First Assistant Physician to the Lexington State Hospital at Lexington, Ky.

RICHARDSON, DR. W. W., Chief Physician at Department for Men at State Hospital for the Insane at Norristown, Pa., resigned November 1, 1912, to take charge of the Mercer Sanitarium at Mercer, Pa., which he has purchased.

RICKETTS, DR. JOY, Assistant Physician at Peoria State Hospital at Peoria, Ill., resigned.

RIEGEL, DR. MARGARETTA R., appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., July 1, 1912.

ROBB, DR. J. J., Assistant Physician at Warren State Hospital at Warren, Pa., resigned.

ROOHAN, DR. J. F., appointed Medical Interne at Matteawan State Hospital at Fishkill-on-Hudson, N. Y.

ROWAN, DR. S. L., Assistant Physician at State Insane Hospital at Vicksburg, Miss., was painfully injured by falling timber August 3, 1912.

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Russell, Dr. John W., First Assistant Physician at Matteawan State Hospital at Fishkill-on-Hudson, N. Y., promoted to be Superintendent.

Ryerson, Dr. Esther A., Assistant Physician at Mount Pleasant State Hospital at Mt. Pleasant, Iowa, resigned to enter private practice.

Sanborn, Dr. Charles, Assistant Physician at Chicago State Hospital at Dunning, Ill., appointed Medical Inspector at Ellis Island.

Schwambach, Dr. Louis, appointed Interne at Kankakee State Hospital at Kankakee, Ill.

Seward, Dr. William H., appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., July 1, 1912.

Shepherd, Dr. A. F., formerly Superintendent of Dayton State Hospital at Dayton, Ohio, has opened a sanitarium near Dayton with Dr. J. C. George.

Smith, Dr. Henry V., appointed Superintendent of Hudson County Hospital for the Insane at Snake Hill, N. J.

Smith, Dr. Lloyd L., U. S. Army Surgeon on duty at Government Hospital for the Insane at Washington, D. C., transferred to the Walter Reed Hospital June 22, 1912.

Solomon, Dr. Meyer, Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned March 31, 1912.

Spaulding, Dr. H. O., Assistant Superintendent of Norwich State Hospital at Norwich, Conn., resigned to accept similar position at the Westborough, Mass., State Hospital, and was appointed Superintendent of the same July 1, 1912.

Stransky, Dr. Josephine M., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned August 17, 1912.

Steckel, Dr. Harry A., appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., September 1, 1912.

Stevens, Dr. F. T., Assistant Superintendent of Mt. Pleasant State Hospital at Mt. Pleasant, Iowa, resigned.

Sullivan, Dr. F. J., Second Assistant Physician at Kankakee State Hospital at Kankakee, Ill., transferred temporarily to Chicago State Hospital.

Thomas, Dr. Albert C., Assistant Physician at Connecticut State Hospital at Middletown, appointed Superintendent of New Haven State Hospital.

Thomson, Dr. Archibald W., Assistant Physician at Hudson River State Hospital at Poughkeepsie, N. Y., transferred to Central Islip State Hospital at Central Islip, N. Y.

Tomlinson, Dr. H. A., Superintendent of State Insane Hospital at St. Peter, Minn., appointed Superintendent of State Inebriate Hospital at Wilmar, Minn.

Tremaine, Dr. Annie M., formerly Woman Physician at Craig Colony for Epileptics at Sonyea, N. Y., died March 25, 1912, aged 45.

Truitt, Dr. Ralph P., Junior Assistant Physician at New Jersey State Hospital at Trenton, appointed Chief Resident Physician at City Detention Hospital at Baltimore, Md.

Vavasour, Dr. John F., appointed Medical Interne at Manhattan State Hospital at Ward's Island, N. Y., June 19, 1912.

Waterman, Dr. Chester, Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., transferred as Second Assistant Physician to Willard State Hospital at Willard, N. Y., May 1, 1912.

Webster, Dr. B. R., appointed Assistant Physician at Matteawan State Hospital at Fishkill-on-Hudson, N. Y.

West, Dr. Calvin B., Senior Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., granted leave of absence from July 1 to September 30, 1912, on account of illness.

Westcott, Dr. Niles, appointed Assistant Physician at State Hospital for the Insane at Howard, R. I.

Whitney, Dr. Ray L., First Assistant Physician at Danvers State Hospital at Hathorne, Mass., appointed First Assistant Physician at Worcester State Hospital at Worcester, Mass.

Williams, Dr. Harry D., Assistant Physician at New Jersey State Hospital at Trenton, resigned to enter private practice.

Wolff, Dr. George B., appointed Clinical Assistant at Sheppard and Enoch Pratt Hospital at Towson, Md., June 1, 1912.

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WOODEN, DR. WARREN, appointed Special Medical Attendant at Buffalo State Hospital at Buffalo, N. Y., June 1, 1912.

WOODWARD, DR. E. S. B., Assistant Physician at Westborough, Mass., State Hospital, resigned June 8, 1912, to be Assistant Physician at Norwich State Hospital at Norwich, Conn.

YOUNG, DR. DAVID, Superintendent of Selkirk Hospital for the Insane at Selkirk, Manitoba, resigned and appointed Consulting Physician to the public institutions of Manitoba.

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AMERICAN JOURNAL OF INSANITY

THREE-QUARTERS OF A CENTURY OF INSTITUTIONAL CARE OF THE INSANE IN THE UNITED STATES.*

BY DR. HENRY M. HURD,
Baltimore, Md.

The history of the care of the insane for the last century or more shows that four distinct periods exist in its development.

FIRST. *The Period of Neglect.*—The period of neglect existed from the settlement of the country down practically to the opening of the Utica State Hospital in 1843. It is true that sporadic efforts were made in certain communities to provide for a few of the more urgent cases of insanity, but there was no concerted or sagacious plan of action or any conception of the magnitude of the undertaking.

The first effort as has often been pointed out was made in Philadelphia in connection with the Pennsylvania Hospital for the Insane in 1754. In the original appeal for funds to provide for building the Pennsylvania Hospital the express intention was to provide a place for insane people. This term insane, however, referred at this time more especially to such persons as were violent and required custody to prevent them from doing injurious acts toward their neighbors or themselves.

The care thought of was almost wholly custodial and for a long time, and probably until the time of Rush, little was attempted in the way of medical treatment.

Such patients were provided for in cells in the basement of the hospital. In the excellent history of the Pennsylvania Hospital, edited by the late Dr. Morton, interesting details are given of the character and conduct of these patients, as described in the note-

*Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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books of a trustee. I regret to say that it was customary to exhibit them to the public on certain days for a trifling pecuniary consideration. It is evident as the history of the hospital is carefully scanned that the arrangement was not a satisfactory one and that general hospital patients and insane patients mutually rejoiced when the transfer of the insane was made to the new hospital in West Philadelphia in 1841.

The institution at Williamsburg, Virginia, seems to have been the first hospital in the United States designed exclusively for the care of the insane. It was provided for by the House of Burgesses in 1769 and opened in 1773. It was under the charge of a keeper, who was made responsible for its internal and financial management and was evidently largely a house of detention. The medical care was confided to a physician who visited the institution but did not have the responsibility of its management. It seems to have received pay patients and was not in any sense an institution for the neglected or destitute insane.

Next in order of erection was the department for the insane connected with the New York Hospital, afterwards known as the Bloomingdale Asylum and now as the Bloomingdale Hospital. In the New York Hospital as in the Pennsylvania Hospital an effort was made at first to provide for patients in connection with the general hospital, but so many difficulties were experienced that in the year 1809 it was thought advisable to build a separate institution in the upper part of the city. Aid was sought from the legislature and granted for that purpose. This separate institution subsequently developed into the Bloomingdale Asylum and later became the Bloomingdale Hospital now at White Plains. In this institution little could be done for the care of the indigent insane because the cost of treatment was necessarily so high as to render county officials disinclined to make contracts with it for the care of their insane.

The McLean Hospital, founded in 1818, was also a department of the Massachusetts General Hospital, but through the liberality of John McLean was housed upon an entirely separate estate and had an independent existence.

About the year 1817, stimulated by the success of the York Retreat in England under the care of the Tukes, the members of the Society of Friends established and located the Friends Asy-

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lum at Frankford, a suburb of Philadelphia, which did excellent work in a quiet, unostentatious way, principally for members of the religious Society of Friends, for many years.

The institution which exerted the most influence in New England and undoubtedly fostered the establishment of several institutions for the insane of a semi-private class was the Hartford Retreat originally built in consequence of a movement initiated by the Connecticut State Medical Society, the members of which furnished the funds. It fortunately came under the guidance of Dr. Eli Todd who became the first superintendent and seems to have had a general interest in the better treatment of the insane throughout the New England States. This institution received private patients but also had an arrangement with the towns of Connecticut and received indigent patients at a rate of payment less than the actual cost of treatment.

The work done by these various institutions was at first tentative and in many ways incomplete from our present view point, but the institutions undoubtedly did much to stimulate a greater interest in the welfare of the insane throughout the whole country.

The next institution to be erected was the South Carolina Hospital at Columbia, built by the state after a long and determined effort on the part of two philanthropists who were not medical men. The institution was designed for all classes of patients but seems to have been used largely for patients who paid their expenses or whose expenses were paid by the counties. It was not a state institution as we understand it to-day.

The hospital at Columbia grew out of the success of the institution at Williamsburg, while the New York Hospital and McLean Hospital were largely the result of the good work inaugurated in the Pennsylvania Hospital.

The Friends Asylum and the Hartford Retreat were both important factors in the erection and organization of the Utica State Hospital on broad lines. The commission charged with its construction and later with the duty of devising rules for its organization and management, although it visited the institutions for the insane then existing in this country, based its recommendations largely upon the experience of the Friends Asylum and the Hartford Retreat.

The first superintendent, Amariah Brigham, also received his training under Dr. Todd at the Hartford Retreat and came to

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Utica fully equipped for the constructive work which he afterwards did there.

There is little doubt that the influence of the Utica State Hospital did more to develop our present system of state care than any other single agency. Added to this may be mentioned the work of Miss Dix, who in season and out of season visited poor-houses, jails and receptacles in many states and originated and continued an agitation which resulted in the erection of institutions for the insane in New Jersey, Pennsylvania, Maryland, North Carolina, Alabama, Mississippi, Tennessee, Louisiana, Illinois, and Texas. She was also consulted about the erection of institutions in many other states and her influence and example were of great service to incipient institutions in pioneer states.

SECOND. *The second period in the history of the institutional care of the insane may be styled the Era of Awakening.*—It is to be regretted that owing to pioneer conditions it was not practicable to develop the care of the insane in America in a natural way, and thus evolve a system which was adapted to the needs of the country. Unfortunately the insane and dependent classes became early identified with each other. In many eastern states the only insane cared for were those already paupers and frequently, as in New Hampshire and Connecticut, were bid off each year by persons who were prepared to assume charge of them at the lowest figure. It consequently happened that most of those who were able to look after themselves were allowed to wander about through the country exposed to hardships, danger and ill-treatment. If they were feeble or helpless there were placed in such poor and unsuitable homes as would naturally be furnished to them by persons who were willing to eke out a small income by the care of an insane person in the family. If they were violent and destructive they were cared for in cages or pens in county houses or were placed in jail. No systematic effort was made to assume care of any of these patients at a stage of their disease when they were in a condition to receive benefit from treatment; they were neglected until incurable and when incurable were taken care of in the cheapest manner possible without regard to their comfort and well being. This condition of affairs existed throughout the United States and no state unfortunately can claim the monopoly of ill-treating the insane. There may be said in excuse

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for such hard conditions that the majority of the inhabitants of the United States, both in New England and in the newer portions, were struggling for a living and needed all the resources which they could gather together to care for themselves, and to develop new settlements and homes in the dense wildernesses.

The era of awakening came slowly in the United States. In Connecticut, as already stated, the State Medical Society played an important part in arousing the benevolent of the state to action to provide for the insane. The building of the Hartford Retreat directly influenced the establishment and building of the institution at Brattleboro, Vt.; it also had much to do with the establishment of the state asylum under Dr. Woodward at Worcester, and to a less degree with the establishment of the Boston City Hospital for the Insane. The work in New Hampshire was connected closely with the establishment of the Brattleboro Retreat. It is interesting and to a certain degree humiliating to read the story of the struggle in New Hampshire prior to the erection of the New Hampshire State Hospital. Philanthropists viewed with distress the neglected condition of the insane in county houses and in families where the pauper insane had been "bid off" to the lowest bidder. Petitions poured in upon the legislature for the establishment of a state hospital. Physicians delivered addresses before the legislature, philanthropists urged the measure session by session and governors were most importunate in their annual messages and yet for eleven years the agitation continued before an institution was established at Concord. Even when established it was not a state institution, although it received state aid. Had it not been for the benefactions of benevolent friends it is doubtful whether it could have obtained the degree of usefulness which afterward came to it. The slow growth of public sentiment in the state is shown by the fact that the past decade has witnessed the conclusion of a movement begun in New Hampshire more than 70 years ago to provide state care for the indigent insane.

The era of awakening came like a popular wave in various states and resulted in the establishment of institutions in nearly all the eastern states, as well as in what are now known as the central states.

As previously intimated the organization of the Utica State Hospital had probably as much to do with the progress of the move-

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ment as any other single agency. Here we had an institution built by a state on an extensive and liberal scale, officered by meritorious appointment of officers, with definite laws for the admission and discharge of patients. The definite object of the institution was to take the insane out of alms-houses and to provide for them in a well ordered hospital. Here also for the first time under state charge was provided some accommodation for private patients of the semi-indigent class. The act under which the Utica Hospital was organized has been a model for similar institutions throughout the United States and has undoubtedly proven an important agency in developing state care.

THIRD. *The Period of State Care of the Insane.*—About the year 1850 state provision for the insane in the United States began to be considered a matter of state duty. This does not mean that all the states were provided with institutions for the insane but merely that the attention of the public was directed to the necessity for state care, and one state after another began to erect a single institution for the insane. It must be confessed that the conceptions of philanthropists, physicians and legislatures as to the extent of the problem of providing for the insane and the best way to meet it, were vague and the measures adopted proved to be in every instance deplorably inadequate. It seemed to be generally thought that a single institution in each state would suffice to take care of all the insane. This theory was based upon an idea which had lodged firmly in the public mind that prompt treatment would cure nearly all persons who suffered from mental trouble. The conception of insanity at that date was largely derived from its development in excitement, and many excellent men believed that when the excited patient became self-controlled he was cured. We now know that in many instances the apparent cure was but a remission in the disease and that many of the patients suffered from forms of incurable disease not then generally recognized. The cure was more apparent than real. We know also that the wear and tear of existence in cities and older settled portions of the country vastly increased the conditions favorable to the development of mental disease. The influence of the immigration of degenerates and of persons who found themselves unsuited to the environment of a new country, under changed social conditions and exposed to unaccustomed hardships and pri-

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vations, was also very imperfectly appreciated or not taken into account. These and other influences made demands upon institutions for the insane far beyond the expectations of the sanguine men who established in most of the states a single institution under the impression that it would care for the insane of the state for an indefinite period.

The experience of New York well illustrates the difficulties which were speedily encountered. The Utica State Hospital was located originally near to the geographical center of the state with the expectation that all the patients in the state would be sent there for treatment. After a time it was found that the institution was filled and that the only way to secure any room for acute cases was to encourage county officials to remove their patients to alms-houses in order that preference might be given to cases of acute disease. This inevitably brought about the erection of institutions for the chronic insane in almost every county in the state. and during the period between 1850 and 1865 the alms-houses were crowded with chronic cases, whose condition became a reproach to the state and a blot upon its civilization.

Another difficulty arose from the theory that institutions should remain small—a theory shared by their medical officers because of an imperfect realization of the problem, due probably to the fact that they had been educated in small institutions where the work of the superintendent was personal with every patient. An attempt was consequently made to limit the size of every institution to the end that the superintendent might personally direct the whole treatment of every patient. Under the circumstances little effort was made to appoint or to develop assistant medical officers and the superintendent became superintendent, physician, steward and general utility man. This necessarily limited the size of the institution and all efforts to increase its capacity were contested by the medical officers.

It must be confessed also that the scheme of building which was approved by the majority of superintendents and set forth in the famous "propositions" was too rigid and did not permit of proper expansion. This is well illustrated by the fact that these stern, unyielding provisions which for many years were regarded as "a law of the Medes and Persians" were gradually modified by force of circumstances and finally abrogated altogether. The

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intentions of the framers were honorable, praise-worthy and productive of good, but as absolute rules to be followed for all time they were foredoomed to failure. The great wave of insanity was submerging the country and no propositions or resolutions however carefully framed or unanimously adopted could arrest the rising tide. The system also of partial state and county support for patients in state institutions upon the whole worked badly and tended to encourage the erection of county institutions because county boards of supervisors and county boards of superintendents of the poor were made partners in the work and judges as to whether patients should be treated at home or sent to a state institution. This encouraged the county officers to build county institutions in the interests of a false economy and to remove their patients to them.

As previously stated the difficulties which were encountered in providing for cases of chronic disease without blocking the whole hospital system gave rise to frightful barbarities in county almshouses and in New York resulted in the establishment of institutions for the chronic insane at Willard and Binghamton. This movement, although temporary in its character, accomplished great good for the time being and called the attention of all good citizens to the absolute necessity of state care for the insane of the state.

The hospitals at Willard and Binghamton eventually became centers for the care of all classes of the insane in the districts surrounding them when New York adopted state care.

The era of awakening then was an era of experimental effort, involving much groping in the dark and much waste of money. Many mistakes were committed, but the outcome of the movement was state care as a policy throughout the United States. There are still a few states where state care has not been fully established, but the trend of public sentiment is altogether in this direction and another decade will see it inaugurated in fact as well as in name throughout the country.

FOURTH. *The Period of Scientific Care.*—Provision for the insane in the United States has now reached the era of scientific care.

This looks to the study of mental diseases, their causes and development, and the study of the local conditions and surroundings

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of insane patients to ascertain the genesis of the disease and the best method of preventing its development. It also looks to the after-care of patients and the study of social conditions in order to promise to patients discharged from institutions a reasonable prospect that a fresh attack of mental disease may be prevented by proper home surroundings.

In the study of the causes of insanity new and special attention is now given to syphilis as an exciting cause of many organic brain affections. The "Wassermann reaction" has cleared up much obscurity in the development of general paresis. The same is true of the latest knowledge of the relations of internal secretion to bodily metabolism. It is now evident that some forms of mental disease depend upon a hyper-secretion or a diminished secretion of the thyroid gland, and surgical interference or proper medication are indicated to correct the thyroid disorder. The same is true but to a limited extent of mental disease due to brain tumors or tumors connected with the pineal gland. Such attempts to correct organic brain troubles by surgery or to improve internal secretions by proper medication are in their infancy, but enough has already been done to point the way to the hopeful treatment of several hitherto incurable affections.

It is now strongly impressed upon the mind of the profession that to cope with insanity in a given locality there must be a close relation between the institution and the region around about it. Also that patients should be encouraged to come voluntarily to institutions in the incipient stages of disease and that convalescent patients when able to leave the institution should remain under its supervision in order that causes of disease which precipitated the first attack may be removed before they become operative; and wise counsel may be given throughout the period of convalescence.

Another equally essential part of the modern treatment of the insane consists in the adoption of "non-restraint methods" of treatment. These methods, as Dr. C. W. Page in his admirable little book has recently pointed out, do not consist alone in the abolition of mechanical restraint, but rather in the substitution of methods of care and treatment which are not irritative and which secure the confidence of the patient from the beginning and his co-operation without exciting animosity and violent outbursts, such as are inevitably connected with the use of mechanical restraint. Non-

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restraint methods mean sympathy, kindness, tactful guidance, diversion, employment and a kindly appreciation on the part of medical officers and nurses of the distress and discomfort of persons suffering from insanity. Without these essentials any non-restraint which consists merely in removing restraining apparatus is a farce and is soon replaced by harshness and intimidation. The philosophy of non-restraint methods is now well understood and nurses are trained to care for the insane as sick people rather than as wayward persons who require repression and irritating control.

The consideration of these different eras leads to the work of the committee on the institutional care of the insane and its endeavor to obtain information about the development of care in each state. To this end the committee requests the assistance and co-operation of every superintendent. When it is borne in mind that at least 200 state, municipal and corporate institutions exist in the United States it is readily understood that no single man or no committee of men can collect the right material and write a proper history of individual institutions. There must be hearty and efficient co-operation on the part of every chief medical officer of every institution to help in the work.

In reply to many inquiries which have come to me and to make clear what the Committee on the History, etc., desires, I will say a few additional words.

Laws for the Commitment of the Insane in Every State.

It is interesting to notice that thus far in the history of provision for the insane in this country there has been a tendency to go from one extreme to another in matters of laws for the commitment of patients. The hospitals originally had no legal proceedings looking to the commitment of patients but depended upon the certificates of physicians as to the necessity of treatment and then followed the usual routine which would be required to admit a patient to any general hospital. Later largely or wholly because of the agitation which arose in some states by reason of complaints of half-cured patients that they had been deprived of liberty without "due process of law" (an agitation sometimes it must be confessed fostered by superintendents of institutions for the insane who desired to secure some legal protection from suits for false

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imprisonment and illegal detention) acts were passed in a number of the states requiring that the admission of patients to institutions should be surrounded by legal formalities such as an opportunity to appear in court and sometimes even the arrest of the patient under a charge of insanity and his examination by a prosecuting attorney before a jury impaneled to determine the question of his sanity and his final commitment and transfer to the institution for the insane. This condition of things existed in Illinois for many years and it also exists in the State of Minnesota to-day, except that the two medical examiners required by law are called a "jury" and the examination before them is rather euphemistically called a "jury trial." Within the past five years this tendency is passing away and we now hear much about voluntary admission of patients to institutions. Some corporate institutions in fact now receive more than half of their patients without the formality of a commitment.

The committee desires to trace this process in every state and to be able to give a history of the movement which has culminated in the present remarkable facility with which patients can be placed in institutions for treatment.

The Criminal Insane.

It is also desirable that information should be given as to the attitude of each state toward the care of the criminal insane. Many states have wards in the state hospitals for the violent and criminal insane. Other states like New York, Michigan, Illinois have hospitals for the criminal insane, in order that criminals may not be brought into contact with patients in the usual state hospitals. There seems to be a general feeling that the association of the criminal insane with the ordinary insane is not desirable and not conducive to the happiness and comfort and restoration of either class. The committee desires to know as to this.

Detention Hospitals.

It seems equally desirable that the policy of each state as to a detention hospital should be carefully given. Some states have gone so far as to require every large city to have a detention hospital; others have taken the view that each state institution should have a detention hospital connected with it, and others have ar-

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ranged for the organization and development of detention hospitals in connection with certain well endowed general hospitals as wards or departments.

It seems important that the committee should know accurately and fully what has been attempted in all states in this respect.

Hospitals for the Chronic Insane.

The movement to establish separate hospitals for the chronic insane was inaugurated in New York, by the opening of the Willard State Hospital and the conversion of the Binghamton State Hospital from an inebriate asylum to a hospital for the insane. A similar conversion took place in Minnesota, but in the latter case the inebriate hospital was converted into an institution for the treatment of acute cases. In Minnesota, however, two institutions have been built and set apart for the chronic insane, one at Hastings and the other at Anoka. Other states might be mentioned as having similar hospitals. It is evident, however, that the movement in the direction of separate hospitals for the chronic insane has spent its force and that the tendency at present is towards the creation of hospital districts surrounding every institution to the end that patients may be quickly transferred to the hospital and there receive whatever treatment their condition requires, whether they are acute or chronic cases. We wish to know the practice in every state.

After-Care of the Insane.

The scheme to district each state and to render admission to the hospital for the insane as easy and expeditious as possible brings also as a logical result the ultimate purpose to give efficient after-care to patients who are well enough to be discharged from the custody of the institution. It is evident to all who have to do with the discharge of convalescents that there is no certainty that these patients under the stress of unfavorable conditions of home life will maintain the degree of health which has been attained in the hospital. Wise philanthropists accordingly have come to the conclusion that systematic after-care under the direction of trained medical men, preferably clothed with the authority of the managing board of the hospital serving the district. With such a system of after-care when patients return home the pos-

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sibilities of an unfavorable environment and a return to the hospital may be reduced to a minimum. The practice of the different states in this respect needs to be carefully compared, to the end that a complete account may be given of all that the states are doing or have done for the prevention of mental disease.

Architectural Changes and Improvements.

It is desirable that architectural changes, improvements and experiments should be carefully detailed. The committee desires to know what states are providing for the insane on the cottage plan; what states have detached buildings for the chronic insane; how far colonies have come into vogue and how far they are accomplishing the objects sought for by giving opportunities for labor to patients in good health who need active outlets for their energies. It is also desirable to know how many states have made hospital provision for acute cases and what number is still building institutions on the old monastic plan which obtained in this country 75 years ago.

Scientific Work.

It is most important that the scientific work of institutions throughout the United States should be carefully described. Every hospital which attempts it should give a detailed report of methods and results.

Biographies, Etc.

As stated in a previous paper, biographies of the pioneers in the work of erecting institutions or in stimulating an interest in the insane should be furnished, also of the medical men who had so much to do with the earlier development of the institutions.

In conclusion the chairman of the committee desires to express the earnest hope that the committee may receive from every member the fullest possible co-operation. The preparation of this history is your work and not the work of the committee. We have undertaken it under your direction, with great reluctance and some unjustifiable delays on our part. All the members of the committee now are thoroughly enlisted to push the history to a speedy conclusion. It must, however, require many months of close labor to secure the material and to collate and arrange it for the press.

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OCCUPATION FOR THE INSANE.*

By C. FLOYD HAVILAND, M. D.,
Kings Park, L. I., N. Y.

It seems almost trite to discuss the therapeutic value of occupation for the insane, so thoroughly has practical experience demonstrated that it is the most powerful single means at our command in curative treatment, and that appreciation of this fact has not been confined to a recent period was pointed out by Dr. Pilgrim, of the Hudson River State Hospital, Poughkeepsie, N. Y., in discussing some years ago a paper read before a conference of New York state superintendents by Dr. Smith, of the Central Islip State Hospital, Central Islip, N. Y., on the subject of occupation for the insane. Dr. Pilgrim quoted Benjamin Rush, the pioneer American psychiatrist, showing that as early as 1798 the latter recognized occupation as of value in his work. Dr. Pilgrim likewise quoted various reports and records, showing that at intervals during succeeding years the subject has held the attention of those engaged in caring for the insane. But old as the subject is, it is only in recent years that industrial and educational work has assumed a proper relationship to other institutional activities, none of which can be regarded as more important.

In recognizing the fact it is well to consider the reasons underlying it. Dr. Meyer, Emeritus Director of the New York State Psychiatric Institute, illuminated the whole subject when he spoke of dementia præcox in terms of disorganized habits. These patients, forming the bulk of the chronic insane, require then, most of all, habit training which is the aim of all occupational re-education. The insane show a lessened or loss of capacity for normal adjustments and it is but simple logic which leads us to attempt to substitute for faculty reactions, of psychic disorganization, normal reactions, however simple, in the way of profitable activity. Idleness leads to introspection, whereas occupation demands attention directed upon outside matters; the insane loss of self-control must be, in a measure at least, overcome in securing creative activity. Use of the hands means at least an elementary

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activity of the mind, conversely, idle minds eventually follow idle hands and it is but a truism to repeat that unused function, psychic as well as material, becomes enfeebled.

In a way it is strange that the paramount importance of the subject has not stimulated us to more constant effort in this direction. Prisoners are no longer allowed to remain in idleness, and among defectives educational occupation is the great feature of their care. When the same attitude is universally assumed concerning the insane, where indeed the outlook is more hopeful, dealing as we do with defective capacity due to disease rather than to congenital lack, it does not seem a far fetched assumption to believe that thereby the vast numbers of chronic insane now in our hospitals may be reduced and those remaining become in a much greater degree partially self-supporting.

Insane patients in institutions have for many years assisted with the routine work, but such workers have been those who have worked willingly, while those forming the mass of chronic patients, the ones most in need of occupational training, have remained idle, and in many cases noisy and destructive, when by proper teaching, their abnormal activity could have been directed into productive channels. There is of course an economic as well as a therapeutic aspect to this work, and, while taken in the aggregate, the economic side is of great importance, yet that will care for itself if the therapeutic standpoint be sufficiently emphasized. Every idle patient taught to assume however small a niche in the hospital activity is to that extent less of a burden upon the community. One of our greatest difficulties, however, is to sufficiently emphasize the therapeutic standpoint and to make plain the fact that zeal in this direction is as truly medical as zeal in drug or hygienic treatment. We should appreciate that the daily routine of our patients' lives is not something apart, requiring merely casual supervision, but that everything done for a patient has a medical aspect. Our attitude should be sufficiently broad to eagerly seize every means whatsoever which promises help to the unfortunates under our care.

But apart from the usual routine work, we now find in most hospitals for the insane occupational classes, the basic purpose of which is re-education. In the Manhattan State Hospital, New York City, and Kings Park State Hospital, Kings Park, L. I., the

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institutions with which I am most familiar, both kinds of work cover a wide range of activity, this being essential that it may be possible to fit the work to the patients' diminished capacity rather than vice versa. Only thus can we give the patient that sense of completion so often emphasized by Dr. Meyer and the value of which we have all experienced in the satisfaction felt when we have finally completed a task to which we have set ourselves. A sense of accomplishment is one of the greatest incentives to renewed effort with the insane as with the sane. Dr. Smith, in the paper already mentioned, emphasized the necessity of carefully and systematically grading occupation for insane patients, as regards both difficulty and attractiveness. From the practically mechanical picking of hair by a stupid dement to the production of artistic oil paintings is a far cry, but with many varying capacities many varying occupations are required, that a proper selection, one for the other, may be made, always of course under medical direction.

In beginning a process of re-education or training faculties by use, the means employed must be simple and direct and, so far as possible, stimulating and attractive. It should be begun as soon as the patient is physically able to co-operate and our efforts continued unremittingly. Beginning with the most elementary forms of activity in the more inactive cases it is essential to pass as soon as possible to creative work, always remembering that monotonous toil has a deadening effect and that therapeutic effort calls for occupation rather than heavy labor. Of course success does not always follow and we may then resort to calisthenics, folk dancing, etc., in an endeavor to excite interest. Physical movement to music may be the beginning of later purposeful occupation and indeed the two may often well go hand in hand. All occupation should, as soon as possible, have a definite object for the patient, and, as for calisthenics, drills, etc., they will be of more value if used as a means to an end, as for the purpose of preparing for an occasional entertainment.

Entertainments in which patients participate form a valuable method of training and are occasionally the means of first arousing the much desired interest, patients sometimes having been thus induced to work when other means have failed. Recreation should always attend occupation whether in classes or in routine hospital

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work. Too often is it the case that the tea parties, picnics, etc., enjoyed by our patients are attended by the convalescent and class patients to the exclusion of the so-called chronic workers who are usually employed when such affairs are held. Never should work be an end in itself nor should it assume such prominence as to deprive thereby patients of pleasure. No matter if employed in routine hospital work slight readjustment will render it unnecessary to seriously disturb the essential routine of the hospital activity. Many chronic patients, who have had no special entertainment for years, show an almost pathetic gratitude at some simple gift or amusement, so grossly out of proportion is it, judged by normal standards. If philanthropists knew the actual situation, through no other channels could they produce an equal amount of human happiness with less expenditure.

The attitude of those directing occupation is all important. The harsh dictatorial manner will never yield desired results. The patients in a way only reflect their caretakers. The classical, wild, raving maniac was a product of cruel methods of restraint and authority exercised through force. Happily we can now surprise the average layman by the great rarity of such cases and the comparative ease with which such conditions are controlled by modern methods of hydrotherapy, gentle tact, etc., replacing brutal strength. In a like manner patients will reflect their instructors' zeal and earnestness in occupational effort. The personal equation of the instructor, therefore, becomes most important and indeed, in any given instance, the success or failure of special effort in this line will depend more upon the character of the instructor than upon the character of the patients. It is much easier for an attendant to say that a dull and inactive patient will not work than it is to persist day by day, endeavoring to induce such a patient to perform a simple task. I well remember about ten years ago when 500 non-working patients were transferred from Blackwell's Island to Manhattan State Hospital, Ward's Island, and a transfer of working patients from such hospital to other hospitals was in turn made to provide room for them, the calamity howlers among the attendants were numerous and vociferous; the good workers having all been sent away, the ordinary work of the hospital could never be accomplished. While at first some difficulty was encountered, yet necessity so stimulated effort that

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within a comparatively short time where no workers had existed they had been produced. This incident has remained in my mind as proof that occupational instruction is capable of almost indefinite extension, provided only, sufficient, capable and tactful individuals can be secured to carry it on. Instructors are required who will take an active personal interest in each individual case, guiding the patient through the process of re-education as the teacher guides the child.

Many practical difficulties are of course encountered, but they are invariably magnified by the poor instructor and minimized by the good one. Many patients who have absolutely refused or have been incapable of co-operation have, after patient and tactful perseverance, reacted to the efforts in their behalf. Sometimes there is a definite reason for the patient's lack of co-operation which a skilled instructor will discover and remove. The question has been discussed whether patients should be given work with which they were formerly familiar or work new to them. Experience would seem to show, however, that it is unwise to generalize in this regard, some being first aroused by familiar pursuits and others again first responding to novelties. Results may be obtained in competing with a patient's former work or in competing with fellow patients. Minor products of occupational classes may be used as favors and prizes in competitive games and in table and ward decorations for special occasions, the producer of the work always receiving due credit. It is apparent, therefore, that the question of arousing primary interest must be determined in each case by the individual reaction. At Kings Park some of the most appreciative as well as the most skilled workers are male patients employed out of doors. They find contentment and an added incentive to continued work in an allowance of 50 cents per week from the amusement fund, which small sum amply provides for such luxuries as they may desire and which they purchase at the store of the Employees' Club. These patients live in an open door cottage, they have a parole of the grounds and form indeed a mild aristocracy among the patients, yet they form a superior class based solely upon conduct, thus furnishing a definite goal to stimulate effort and self-control. The fact that never have we had such a patient abuse the privileges extended shows how highly the honor is valued.

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Having emphasized the necessity of skilled specialists in this work it may well be asked how is it practical to carry on such work under present conditions and without prohibitive expense. In this connection our experience at the Kings Park State Hospital may prove interesting. Some time since we had a basket class for men and one for women under the charge, respectively, of an Indian and his wife, who themselves were expert basket-makers. Theoretically they should have been most efficient, but practically much difficulty was experienced with them as teachers of their handicraft. When they finally refused to teach a special line of work because it was "an Indian secret," a change was thought to be necessary. An employee in one of the shops, who had previously relieved the Indian and had showed much interest in the work, was appointed to the latter's position and largely by his own efforts he has made himself much more efficient than his predecessor. In a like manner an ordinary ward attendant, who had done substitute duty with the woman's basket class, soon proved her capability, and in brief, with the exception of a physical instructress who conducts our classes in calisthenics, folk-dancing, etc., our instructors have all been developed from the regular force. Through the co-operation of the State Commission in Lunacy several positions as special attendants have been allowed for this work and, it being known that promotion depends upon competency, we have succeeded in developing considerable rivalry, not only among the members but between the instructors of the different classes.

The importance of grading occupational work, as mentioned, being early recognized, we sought a supervising head who could co-ordinate all the varied activities in our industrial and educational classes. We found that our superintendent of nurses had shown great interest in the work and without extra compensation she readily agreed to assume supervision of it. With the co-operation again of the Commission she was enabled to take a summer course, relating to handicraft and occupational activity, in the New York School of Philanthropy. She rapidly developed unusual zeal and efficiency, and through her efforts we have been able to constantly extend the scope of our work until now she has general supervision over four physical culture classes, a fancy work class, four basketry classes, a class in artificial flower-

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making, one in both oil and water color painting, one in stenciling, two in pierced brass work, a day school and a certain amount of work in book-binding and rug-weaving, and the fact, as stated, that the individual instructors in all the above classes, with a single exception, were drawn from our ordinary working force proves that, with the inculcation of a proper spirit of zeal and effort, conscientious and capable instructors can be produced. In a measure this seems to have been aided by the fact that in all instances the regular instructors are expected to teach other employees as well as the patients. Not only must there be competent reliefs provided in case of absence, but regular ward attendants and nurses are expected to develop this work, so far as possible, upon the wards in addition to the class work.

While at Kings Park we thus have our occupational classes fairly well systematized and co-ordinated, yet, as in most hospitals, the various outside working parties, coming as they do from various services, have not been so brought together. Dr. Macy, superintendent, has planned, however, to thoroughly co-ordinate and systematize this part of our hospital activity. It is proposed to put all patients engaged in routine hospital work under the general supervision of an assistant physician, who, being relieved of a portion of his other duties, will be able to devote sufficient time to further develop and co-ordinate such occupations. And if the results meet with our anticipation it is proposed to eventually ask the Lunacy Commission for one or two special attendants to act as instructors in this department, so that our entire outdoor working department may be put upon an educational basis.

Referring again to our occupational classes it may be said that, aside from salaries and materials purchased for the fancy work class, the work is carried on without expense to the state, as the sale of finished products furnishes a fund which can be constantly turned over to purchase new supplies. A patient, a carpenter by trade, was induced to build a large show-case which, standing at the main entrance to the general office, is seen by all visitors and here there being displayed fancy work, paintings, drawings, baskets, artificial flowers, brass work, etc., so many sales are made that it is with difficulty that a show stock can be kept on hand. As, however, certain products have a more ready sale than others,

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an occasional sale is held in the Employees' Club House, a recent one producing receipts of over $30.00. Friends and relatives of the patients are interested and of course are our most liberal patrons. In special cases, however, patients who have accomplished some special bit of work, of which they are proud, are allowed to make their friends a gift of the product. As the fund allows, small sums are spent to purchase articles desired by those who have shown the most improvement in their work or who for other reasons it is deemed wise to reward. It is perhaps needless to add that any system of rewards must be exercised with care and judgment and it is only used as a means to stimulate renewed effort.

The materials used in our embroidery class are purchased by the state, as the fancy articles, consisting of drawn work, center pieces, cushion tops, etc., are issued to various wards and living apartments, but the funds furnished by sales of other class products are sufficient not only to be devoted to the uses mentioned, but special china has been purchased for afternoon teas, a number of books relating to the educational occupations have been purchased and we have been able to constantly retain a surplus fund for emergencies.

Not only has our superintendent of nurses been actively engaged in instructing the teachers of the various activities mentioned, but we have made use of various patients possessing special talent; for instance, the art class is directed by a woman patient, who, formerly an artist, states that her happiest hours since in the hospital have been spent again working at her easel and in teaching others the beauty of art. Objecting to the sale of paintings of her own creation she is allowed to make gifts of them, but she has no objection to the sale of such of her work as are copies. One such copy in oil, however, recently sold for five dollars, so that it may be seen her contributions to the fund are by no means small. The artificial flower work was likewise started by using a patient as the original instructor, and the same may be said as to book-binding and rug-weaving. Since starting the artificial flower work two other patients, skilled in this form of handicraft, have been admitted to the hospital and with three instructor patients to teach both attendants and fellow patients the work has been extended so that it is now a ward occupation

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on several female wards, the product being used for ward decoration. These workers are allowed a portion of the flowers produced to be used as personal adornments and needless to say this acts as a marked incentive. While book-binding and rug-weaving are as yet not extensively developed, the work in the book-bindery has been valuable from an economical standpoint in prolonging the lives of numerous books in the patients' library which would have otherwise been condemned, while the patient directing the technical part of the work has shown steady improvement. Our first rug-weaving was undertaken by a convalescent patient who had been familiar with such work before her marriage. As her convalescence progressed she instructed several fellow patients in the work and showed much skill in devising original patterns. Prior to her discharge she spontaneously remarked that teaching the other patients had so taken her mind from herself that she felt it had much to do with her recovery.

Our physical instructress conducts four different classes, being assisted with each of them by ward nurses. Each class is given exercises in marching, running, wand drills, folk dancing and various games with the basket ball. The wand drills and basket ball games are particularly popular with the men, while with the women, games with light weight bean bags are more popular. Whenever the weather permits these classes are conducted out of doors. The special attendant in charge of these classes likewise supervises and plans entertainments by selected patients which are given in the amusement hall during the winter months.

Our day school for women patients is in charge of a full time special attendant, although for a considerable period she willingly conducted the school as an ordinary attendant, it being possible to give her extra compensation as a member of the hospital orchestra. The usual elementary branches are taught, but in addition instruction is given in drawing, parquetry, school singing and light calisthenics. Occasionally refreshments are served when other patients in the building are invited. It may be added that not only the school but the different classes are also allowed to give occasional teas, and in the summer picnics, to which they invite their friends from other wards, thus in every way emphasizing the advantage of belonging to these classes.

As after all this like other work must be tested by results, it

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may be well to briefly refer to a number of concrete cases which are fairly typical.

Mrs. M. when first taken to the basketry class sat mute and apathetic, constantly picking at her face which was covered with small abrasions as a result. When given a basket to work upon she twisted up the material and dropped it to the floor. She was, however, allowed to sit with the industrious patients day after day for several weeks, meanwhile being frequently urged to participate in the work. However, no results were obtained until it was suggested to her that she make a small basket as a gift for her child at home. For the first time she began to manifest interest, finally complied with directions and after a number of weeks completed several baskets of unique design for her children, this thought seeming to stimulate her first effort. Her physical condition induced us to enter her in the physical culture class, but she soon began to complain that it kept her from her basketry. Continuing to show increasing interest, she was later taught stenciling, and she has since become interested in weaving rugs with a loom. We now have no more industrious patient. She draws original designs for stenciling and weaving and what is still more encouraging is helping other patients to start the work.

Another patient, E. W., was invited into the basketry class by another patient. At first idle, apathetic and untidy, she sat with her raphia in her hand, giving it no heed. After about a week, however, she was induced to assort waste raphia and tie it in small bundles for making raphia rope. She became a member of the physical culture class, which at this time was holding session in the exercise grove. Gradually improving both mentally and physically, she finally began to talk to the other patients and she has now partially completed a basket, although it must be admitted that she appears still incapable of any but the simplest occupation. However, she continues to make raphia rope in an efficient manner, which is used by the other patients.

One patient, S. P., who was so helpless as to be unable to dress or undress herself, was practically mute and only ate on urging. Repeated efforts to induce her to engage in basketry were failures. As is the custom, when one form of occupation fails to interest, she was then tried with another, this time pierced brass work being selected. Although at first continuing indifferent

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unless it was placed in her hands and she was carefully directed how to proceed, limited co-operation was finally secured and she was taught to complete a few simple designs. She has now progressed in ability with corresponding improvement in her general condition. She has completed a few simple articles and has been induced to attempt basket-making. She dresses herself, gets her work on entering the class room, puts it away, and carries on simple conversation.

Another patient who could easily have been dismissed as being incapable of instruction was Mrs. H., both suicidal and resistive, who for a long time was not put in the occupation class for fear she would cause a disturbance. She was constantly watching at the door in an effort to elope, and although it must be admitted, it was thought there was little chance of improving her condition by occupation, a trial was made. At first somewhat less restless and decidedly less troublesome than on the ward, she went for a few days without doing any work, but she then began to assist with the basketry on the promise that whatever she made she could present to her friends and relatives. Becoming more orderly, she ceased her efforts to elope, and in fact, often protested at the close of the class hour, desiring to work longer. After a time, however, she became dissatisfied with the basketry and at her own request was allowed to go to the sewing room where she at present runs a sewing machine in an efficient manner. Instead of being a burden she has become a useful member of the hospital community, while at the same time she is cheerful, often sings at her work, and while possibly a chronic mental case she gets considerable enjoyment out of life.

Such cases as cited could be multiplied indefinitely, but of course an occasional patient is encountered who shows little or no response to our efforts.

One such case, H. B., untidy, indolent and indifferent, failed to co-operate with any form of occupation until she was tried in the school. Here results were still wanting for a considerable period, but finally she began to show slight interest, became somewhat tidier and at present she engages to some extent in the school work. Although this does not include more than a little arithmetical work and simple and crudely executed drawings, an increasing desire to co-operate is perceptible. She no longer

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expectorates on her person as formerly, and meagre as the results be, they seem to warrant continued effort.

S. K. and R. J., both 16 year old girls who were extremely filthy in habits and wholly unable to care for themselves, gave no heed when prolonged effort was made to interest them in occupational work. With persistent individual attention, however, they finally responded to a limited degree, after being placed in the school. They are now fairly tidy in personal habits and participate to some extent in the school activities, one often acting as school monitor and the other showing considerable talent in drawing. Of her own initiative, she gives considerable attention to shading in fruit studies, such drawings first arousing her interest. Thus is shown the necessity of employing flexible methods, in determining the form of occupation in any given case. If failure attends early efforts it should only stimulate the instructor to continue a search for that special form of occupation which will arouse primary interest, and which is sure to be found, in the majority of cases, if the search be sufficiently earnest and prolonged.

To briefly summarize general conclusions it may be stated that:

(1) The therapeutic value of occupation of the insane is axiomatic and is based upon sound psychological laws.

(2) Former haphazard occupations should be replaced by graded, systematized plans of work under a co-ordinating head.

(3) Occupational re-education, as emphasized in special classes, should likewise be a feature of ordinary routine hospital work.

(4) The supervision of occupational re-education is distinctly medical work.

(5) The form of occupation should be adapted to patients' capacity, should not be monotonous, and, so far as possible, should be creative.

(6) Successful re-education means primary interest, and to induce this, methods must be flexible and vary with the individual.

(7) Recreation should accompany occupation, the latter never being regarded as an end in itself.

(8) Success of work depends more upon character of instructors than character of patients.

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(9) Despite necessity of trained specialists for occupational instruction, with inculcation of proper spirit, it is possible to develop most of them from the regular force of a hospital.

(10) Special occupational classes require no expensive equipment and can be made practically self-supporting.

(11) While New York state hospitals are doing more than ever before in occupational training, it is possible to still further extend the work by using attendants as assistants to regular instructors and introducing occupational training as ward work.

(12) While many cases are incurable, despite any form of treatment, the industrious are thereby less burdensome and lead happier lives.

(13) Occupation for insane patients has great economic value, but this must ever remain subsidiary to therapeutic aspect.

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THE RELATION OF CERTAIN PSYCHOSES TO THE NEUROSES.*

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A survey of the various psychoses with an analysis of their symptoms with special reference to complex reactions has seemed to point that while there are a large number of minor reaction groups which it appears desirable to retain for purposes of convenient study and classification, yet the fundamental reactions can be traced to a few rather primary types of abnormal mentation.

The more one looks over the field the more is one's attention drawn to the study of congenital neuron stability or instability as represented in the make-up of the personality without regard to environmental adjunctions. The further application of the Mendelian laws will no doubt throw much light upon what may be expected in human progeny given a certain type of ancestry. Recent studies of heredity point out that the neuropathic constitution is transmitted in the manner of a trait which is recessive to the normal. Also, it is suspected that certain neuropathic disorders are more recessive than others in which scale dementia præcox, epilepsy and imbecility are increasingly recessive in the order named. It would appear that while dementia præcox and epilepsy can not stand in the relation of equivalents from the standpoint of heredity, yet they do bear a kinship in fundamental mechanisms as developed clinically; particularly so do we find dementia præcox and fainting spells or convulsions in childhood, which when occuring in brothers or sisters would seem to form the basis for the assumption of a clinical equivalent grouping on a definite hereditary basis.

The question now comes up for future solution: Are there definite clinical equivalents for what we now consider well-marked psychotic complexes among the so-called neuroses? If this can ever be demonstrated would we not then consider a certain psychosis and its equivalent neurosis as a broad primary group repre-

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senting a real disease entity? These inclusive disease groupings would be based: First, on the make-up laid down by the determiners in the germ plasm of the progenitors; and, secondly, on the fundamental and distinctive reaction types underlying the symptom complex developing later. These final ideatory and kinesthetic activization mechanisms fall into three great groups: Those showing essential difficulty in ideatory activization depending upon actual neuron disorganization, the cause of which may be considered exogenous from the standpoint of the nerve-cell proper, and includes the organic psychoses, the exogenous toxic disorders and the strictly traumatic defects. A second group is that in which mood fluctuation without an essential dilapidation process is the salient feature and where a labile emotional make-up is very noticeable. Third, those which show a failure of adaptation to the irritations of their environment, with a specific tendency toward evading issues to be met and substituting unsatisfactory and faulty equivalents which, as complex-reactions, lead to more or less eventual disintegration of the personality; without the presence of a constant, demonstrable, physical, etiological factor.

Modern investigations have correlated the peripheral nervous anatomy with the central brain stem, both in development and in actual anatomical continuity. Following this reasoning it is questionable whether we can any longer draw a sharp line of distinction between neurology in its old meaning and its twin sister psychiatry. Not only must the whole of the nervous mechanism be considered as one inter-working unit but also the whole of the normal body economy must be taken into consideration, with its component secretions, excretions, and particularly those special stimuli received from the sexual sphere, including here the various erogenous zones; as well as any possible special toxines which might be developed or any internal secretion which might be produced under abnormal conditions.

From a mass of unrelated anatomical facts has been developed a compact neurological structure. From a mass of seemingly unrelated psychotic reactions we hope may be shown a true inter-relationship and equivalent reaction groups, existing within the conception of broad, fundamental processes. Each of these groups has many minor variations. The primary

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upsetting cause in each depends upon definite factors in the antecedents, this being the "primitive streak" so far as the development of the personal make-up is concerned. Then follow variations in the developing make-up, and upon this is the sun or shadow of peculiarities of environment. The immediate causes of upset are exogenous or endogenous factors working on individuals predisposed by the primary causes of mental non-resistance. These more immediate factors may be either physical or mental. The physical includes the usual chemical or biochemical incidents. The mental includes the purely psychic, whose advent on the field may be abrupt or insidious, conscious or subconscious; but in whatever guise they come experience has amply shown that they are entirely adequate to cause the most profound psychotic disturbances if not properly met and adequately reacted to and thus disposed of.

It goes without saying that all mentation and resulting reactions are based on associatory constellations of wide ramifications, but it has remained for recent years to show that behind the abnormal reaction types are certain fairly definite groups of ideatory complexes, especially in the cases showing disadaptability and disjunction with their own particular place in the world's work.

In dementia præcox we find the process occuring first as an irritation, a something which the patient tries to escape and which he refuses to meet squarely and satisfactorily; then gradually, after various substitutive reactions may have been evolved, we see the irritative complex has broken completely through the surface personality, disrupting affect from idea and making normal adjustments to the environment more and more impossible, ending finally in dilapidation. There is in particular a marked lowering of apperception and a growing loss of touch with actual facts and things, upon which depends the peculiar symptomatology of stereotypy, perseveration, negativism, and like reactions.

The mechanisms of hysteria—the classical neurosis of the older text-books—show a somewhat similar splitting process at work, however, of a more orderly type and preserving correct associations through one or more extensive constellation planes, even to the extent of developing several split-off distinctive and coherent personalities with or without amnesia for each other. It appears

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as a specialized, parallel dissociation rather than as the heterogeneous disjunction and imperfect splitting of the dementia præcox group, or, as some prefer to call it, schizophrenia.

In hysteria we find an irritative complex not adequately disposed of by complete reaction, particularly in the emotional field, and its bitter residue is left as an affect memory colored by the sexual sphere. Because this buried complex is distasteful to the personality the individual develops an amnestic mechanism for it. If the complex is of sufficient affect importance, its associated relations to the events of life will be large and it is sure to present several vulnerable points of attack, so that many events, trifling in themselves, tend to arouse its reaction, and it may grow to dominate the whole subconscious psychic activity. This produces diverse psychotic symptoms as well as perverts the peripheral enervation apparatus which is affected equally with mentation by the same process of splitting, so that peripheral stimuli are not correlated with past experiences, and the classical paralyses and other somatic disorders result.

Shall we consider it probable that when a psychic trauma is taken care of by this dissociation-amnestic mechanism the personality is protected and the individual does not deteriorate? When an irritative complex fails to be removed either by adequate normal adaptation or by secondary explanation and mental catharsis, or to be covered by a protective amnesia, do we get the permanent splitting of personality and final enfeeblement of associated activity known as terminal deterioration?

In both hysteria and dementia præcox we find a psychic mechanism at work which is exceedingly sensitive to analysis, and when touched upon produces certain characteristic reflections in the ideatory and kinesthetic spheres, *i. e.*, the abnormal reactions to the association word tests, the phenomena of blushing (vasomotor) changes in heart and respiratory rhythm, fluctuations in the organic activities as in the perspiration, etc. Considering the make-up of these two disorders we find the ego-centric element prominent in each. We know the individual non-resistant to dementia præcox development is shy, sullen, seclusive, and a poor mixer generally. Those cases where such was not readily demonstrable when superficially viewed are seen on a closer analysis to be due to the ego-centric factor overcoming the more usual feeling

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of withdrawal and seclusiveness. The ordinary seclusive type is ego-centric in that it wants to be alone with its own personality, without regard to outside influences; but the apparently non-seclusive case is simply the same seclusive type with the ego so largely predominating that it overclouds the usual reactions as to conduct. Hysterical subjects are also well-known to be intensely ego-centric and selfish and while apparently not exactly seclusive have an equivalent in this direction in their disregard for others and an indifference to the conventions.

The affect disorders of both these psychoses deserve comparison, as in each there is much drifting toward apathy and indifference, particularly in those relations which we are prone to think of as primitive, namely the ties of family. The mechanism which produces sudden impulsive flights and ambulatory incidents in either disorder seems to point to a similar fundamental process at work; while the prominence of hallucinatory reactions in dementia præcox compels our attention especially in comparison to the dreamy ecstatic episodes of hysteria.

The neurosis epilepsy has always been a disease whose mechanisms and etiology were extremely obscure. Recent literature adds little to the older knowledge of this disorder except as to heredity, where it is suspected to be more recessive to the normal than is dementia præcox, and that from a clinical standpoint both disorders were observed occurring in the same neuropathic family tree. If the one is more recessive than the other, and the degree of recessiveness is believed to be proven by the outlook as to recovery from the clinical side, then it seems we might postulate a condition wherein the two conditions were not far from each other on the neuropathic scale, and consequently we should find certain trends in each similating the mechanisms of the other, and while differing widely in surface symptoms throughout the patient's life yet have a certain relationship both as to fundamental cause (which means degree of neuropathic virulence so far as recessiveness is concerned) mechanism of symptom development and final outcome (which also is quite fixed from the kind of determiners as to recessiveness in the parental germ plasm).

From a clinical standpoint we remember that so far as outcome is concerned we do not expect gross dilapidation in all cases of either of these disorders, but as to what may be said for perfect

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efficiency is another matter. From the studies of Jung and others there seems to be a very similar mechanism at work in the symptom-complex reaction of dementia præcox and hysteria; and since the dissociated activities followed by amnesia of both hysteria and epilepsy have phases sufficiently similar to cause grave doubt at times in the minds of the most conscientious observers it does not seem unreasonable to consider that these two classical neuroses should be considered as not only intimately related to each other but bearing many fundamental points in common with dementia præcox, a disorder which we have been led to believe was wholly psychotic in its nature. All three may show more or less difficulty in the field of apperception. They are particularly prone to be somewhat out of touch with their environment and to show disunited trends as expressed clinically in all degrees from the most profound splitting to the finer grades demonstrated with difficulty in the eccentric judgment of the paranoid states, or the selfish, ego-centric, dramatic hysteric, or the gloomy, withdrawn, hypochondriacal attitude of the epileptic.

We are gradually learning that no matter how vagarious the utterances of any psychotic individual may be that nevertheless they all mean *something* to that individual. This is based on the fact that all the psychoses of faulty adjustment and even those showing variations chiefly in the emotional field are reactions upon imperfectly assimilated complexes or association groups. This has been demonstrated by many observers, but as yet little definite stress has been laid upon such psychic causes in the realm of so-called idiopathic epilepsy.

Many convulsive cases show a direct relation to a causal factor wholly psychic and in no way connected with a physical trauma. Such cases point to the extraordinary influence which strongly affective, associated trends can exert. When the convulsive episode is thus initiated upon an individual predisposed in hereditary make-up the condition is likely to recur owing to the lost neuron stability and the convulsive habit is permanently introduced.

So far as the organic changes in the cortex of any of these neuropathic states is concerned it would seem that they are quite variable and inconclusive. The changes themselves have been variously interpreted as both cause and effect. Certainly in the light of our present knowledge it would seem best to cling to that

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etiology which we can at least partially demonstrate and through which we are offered some plan of helping future sufferers rather than adopting a too hopeless view of things based on organic brain disintegration.

The physical stigmata of these dissociative disorders will require much future study, but dulling of the pain sense and the disregard of the muscular sense and similar symptoms as seen in the katatonic may find their corollary in the analgesias and paralyses of the hysterical subject. The indifference of the epileptic to his minor wounds received during a convulsion has often been noticed as a very striking thing.

In the psychoses of the emotional type as exemplified in the manic-depressive group, and the various depressions not of an infective-toxic nature, we find an entirely different state of affairs so far as their relation to any neurosis is concerned. This is based both on its neuropathic heredity value where, although recessive to the normal, it approaches it and is far removed on the scale from both dementia præcox and epilepsy; and from the clinical side where we often consider it as the exaggerated expression of normal mood fluctuation.

Against the dissociative mechanism we have at work an extremely active association process as in the excitements with their flowing stream of related thought and activity. Even the depressed types while they may show actual dearth of ideation yet on analysis exhibit a connected associated complex, however meager. It would seem that our older conception of these groups must be widened somewhat in order to satisfactorily account for certain types which in their mental processes seem indubitably to belong to the emotional disorders rather than to the splitting-complex group. These would include the primary depressions of middle life without senile basis; the depressed, rather querulent types also of middle age; and that class of individuals who while never showing any typical attacks of either excitement or depression are full of boundless activity, good speakers, assiduous writers, prolific promotors of business ventures, sensitive, of easily aroused emotions and of elastic temperament. This is the manic-depressive personality which seems to be quite as typical as the seclusive make-up of the dementia præcox group and no doubt as capable of hereditary transmission as the latter.

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We know from psycho-analysis that here also the psychic type of causal factor is very prominent and affords an explanation for what would otherwise be considered wholly causeless outbreaks of excitement. So far as the depressions are concerned we know that incomplete sexual reactions have a most important rôle, particularly in the only neurosis which claims clinical relationship to this family, namely, the anxiety-neurosis. Just what its relationship may be from the standpoint of heredity is a problem for future solution. The other neuroses remaining to be considered are psychoasthenia and neurasthenia. These seem best placed in the dissociative group and represent simply differing directions of ideatory projection. The psychasthenic type holds to a more purely mental sphere with the development of odd ideas, obsessions and the like; while the neurasthenic centers his mental activities along somatic fields. The fact that either may show symptoms of the other and are always found dependent upon undigested sexual conflicts when sufficiently accessible for analysis would go far to indicate to what broad group they are related. The not rare cases which drift into a typical splitting and maladaptive mental disorder are further proof in this direction.

For the cases appended I am indebted to Dr. William Austin Macy, Superintendent, and to Dr. A. J. Rosanoff for the material on heredity.

CASE 8332.—Miss K. B. Father normal; mother excitable; all brothers and sisters normal. No heredity as to dementia præcox, epilepsy or hysteria. Was a full term child who after a normal birth developed infantile paralysis at 13 months, and still had a slight residual paralysis in both legs at the age of 15 years, when she was admitted. She went to school and received an ordinary schooling but did not get along well in her classes, as she did not care for school and went irregularly. Disposition was called quiet, seclusive, stubborn, and rather indolent. *At the age of 10,* while visiting a girl friend, both girls were *sexually assaulted* by the brother-in-law of the friend. No special reaction beyond fright was noticed and puberty was normally established. About *the age of 13* following a fall on the head without definite skull trauma, *she developed a convulsion* of both tonic and clonic spasms lasting half an hour. Later she began to say that people did not care for her and that people stared at her in a peculiar way. Because she was not allowed her own way she flew into a tantrum at 15 and attempted homicide and suicide. On admission she expressed ill-defined persecutory ideas and did not react well to her environment. She believed her parents never cared for her very much and said things about her to disgrace her. Was oriented but had

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no insight. She continued to have convulsions and was irritable and querulous before them, dull and apathetic afterward. There is here then a complex developing upon soil fairly clear from a hereditary standpoint; physically, depressed in early life by an acute antero-polio myelitis with resulting leg paralysis. At the age of ten she is sexually assaulted and two and one-half years later, following a slight head trauma, develops a convulsive condition with the ideatory complex of parents and people not thinking well of her, staring at her, etc. Her ideas are quite referable to the repressed irritative sexual complex; and the general picture shows difficulty of adaptation to situations presented with a convulsive mechanism engrafted later without definite physical cause.

CASE 7942.—Mr. W. D. T. Three paternal uncles are alcoholic, one had delirium tremens twice, one had chorea; one paternal cousin was an an epileptic idiot; mother had "spasms" at the age of 14, "fainting spells" at 18, and was "hysterical" previous to the birth of patient. This was said to have been due to two frights, one at fourth and one at sixth months of pregnancy. Father suffered from migraine. Patient's birth was difficult and version was performed. However, he developed fairly well and attended school from 5 to 14, but disliked study and did poorly. He could work well but stopped finally because he thought his fellow workmen objected to him and thought also that they commented about odors supposed to emanate from his person. He then had a convulsion while in church during the singing of a hymn. Two or three weeks later he had a second convulsion and then developed the convulsive habit, but never had aura although having both grand and petit mal attacks. He gradually developed periods of uncontrollable excitement during which he would turn round screaming and would assault others. Orientation and grasp remained intact. There is *no amnesia* for a period of seizure; emotional tone is dull and apathetic. There is here to be noted the heredity of similar types, the development of psychosis of annoyance with olfactory hallucinations upon a personality lacking in initiative and with some seclusiveness; then during a religious ceremony he has his first convulsion without any history of physical trauma. Following which the convulsive habit is established with periods of excitement and absolute loss of touch with environment, but *at no time showing amnestic* mechanism.

CASE 8222.—A man with a maternal uncle alcoholic, who had a probably normal childhood up to the *age of seven,* when he and a boy cousin performed mutual *masturbation,* which he kept up for several years. He received a good education and attended college seven years, studying for the priesthood, but finally concluded he had been too sinful for a priest, and became a porter. It was rather difficult for him to learn while in school. He developed a homo-sexual attitude and never had any desire for normal relations with the other sex. After emigrating from Ireland he found work in a large department store in New York. *He worried*

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over his past sexual affairs, believing them wicked, all during his young adult life. Finally reopened this conflict by practicing pederasty about the age of 30. About six months previous to admission, at the age of 31, he began to feel that every one knew of his perverted acts, although he could not explain how they should know, as he had never made any advances to them. Then he began to think detectives were following him to arrest him for sodomy. He thought his fellow workmen remarked about these things and were all against him. He felt he had committed the great sin, and, although absolved by a priest, could not find solace, and eventually tried to commit suicide by taking gas. On regaining consciousness he begged to know about his family in Ireland, and said he thought they were all dead. These ideas persisted in a fairly definite way, without marked impairment of orientation, or the appearance of marked dilapidation. The reaction is apparently quite logically the result of maladaptation to sexual experiences; the mechanism being that of a paranoid type with impairment of efficiency and personality but no gross deterioration.

CASE 7417.—E. K., a man of 25, with a normal heredity. He had convulsions up to the age of five, but was bright and even precocious. He did well in school and studied hard. While quite young was *exposed to perverted sexual practices* by his brother's friends, but eventually did well in business and earned $105 a month with his last employer as an accountant. He gradually showed an indifference to things and seemed apathetic, the while he complained of being annoyed in his office by petty things. He finally came to believe that poison was placed in his food and medicine and claimed the physician should *examine the rectum to see what kind of poison it was.* He thought two other patients were employed to kill him. He also laid much blame on his family for the way he had been reared and complained of neglect and persecution by them. The ideas are formulated on paranoid lines and he shows no gross deterioration. The connection between the delusion of poison in the rectum and the perverted sexual practices is sufficiently obvious without further analysis.

CASE 7431.—J. R., a man who had one brother who suffered from convulsions, and whose father was No. 1062, K. P. S. H. The father on admission complained of loss of memory, dullness and ideas of persecution. The psychosis began about the age of 49 with an active hallucinosis, saw strange men in bed with his wife and thought she wished to kill him. After admission he walked around aimlessly, talked to himself. Eight years later still retained the persecutory ideas; made a queer noise which he called a prayer and was always homicidal towards his supposed enemies. Will drink his urine, fills pockets with rubbish.

The son, No. 7431, was of normal birth, irritable as a child and began *to masturbate.* Was seclusive and cared little for women. Began work at 14 and became a tailor. About the age of *19 he had a love affair,* which was unsuccessful and then he began to worry over himself, cried a great deal but gave no reason for it. He called a priest and doctor and then

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refused their ministrations. He noticed his friends began to act queerly but had no actual enemies nor persecutions. His stream of thought narrowed, he became shallow, seclusive, of poor judgment and drifted into a simple form of general deterioration without marked trends. The whole picture seems to point to a mal-adaption to a situation rooted in the sexual sphere, with masturbation, expressing the abnormal methods of satisfying the conflict and into which are engrafted ideas of disappointment and a feeling that people did not think him to be like other people and therefore looked at him queerly, etc., all of which means a psychosis substituted for a normal reaction in a difficult situation; the individual, moreover, being of a non-resistant neuropathic type as shown by the heredity.

CASE 51865.—S. G., a woman with an heredity showing a maternal aunt who died of apoplexy, and a maternal half aunt who had epilepsy. Personal history was uneventful; she was employed as a servant. About the age of 26 *she was engaged* to a young man who was killed by a train. She showed no immediate reaction but gradually developed the idea that other people were jealous of her and many people united to prevent her marriage, God revealed Himself to her and that she is superior to most people who are jealous of her. She was told by a palmist that happiness would come to her and *she now believes herself engaged to a man.* She is controlled by hypnotism and reacts to auditory hallucinations, the sexually satisfying content of her delusional trend here showing itself largely as a wish fulfillment. Emotionally she was indifferent but showed no gross deterioration, although her conduct demonstrated that she was quite out of real touch with her environment and her difficulties resulted from a lack of adaptation and a lack of capacity for normal reactions when she met incidents of stress.

CASE 6985.—J. D., a woman who had an epileptic mother. *Patient's father was the brother of the mother.* Patient showed nothing very unusual as a child and received a common school education. She married at the age of 22, in 1882. In 1888 she developed epilepsy with a psychosis which improved under treatment, but was subject to varying degrees of intensity for years afterward. In 1910 she had visions of hell and *thought she had to suffer for her children's sake.* She was lachrymose, irritable, sang, prayed and screamed. She would lie in bed as though comatose but could be aroused. The picture presented is a defective type produced by the inbreeding of an epileptic mother with her own brother. A supposedly ordinary epileptic psychosis occurs in this person at the age of 28, six years after marriage. Following the establishment of the convulsive habit we find 22 years later a marked *hyperesthesia* all over the body to both pain, touch, heat and cold. Knee jerks exaggerated and painful, also plantars. Abdominal reflexes are normal. Pupils round, equal, symmetrical and react normally to light and accomodation. *Amnesia for convulsions not able to be positively established.* Her last excitement followed the accidental death of her husband. She thought

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she saw him and other dead relatives; that he would not have a grave, and her children would turn her out; she wished to be with him; then her relatives tried to poison her and she escaped from them in her night clothes (fugue). Her attention was poor and comprehension lacking. Finally she cleared up mentally quite suddenly, almost within a week. Grasp and orientation returned but the convulsions continued about every ten days. We have here a psychosis low on the recessive hereditary scale, but not developing until the age of 28. Finally after a period of quiescence the psychosis breaks forth under a purely mental upsetting cause, in the death of the husband, and the condition found shows unexplained hyperesthesias, a questionable amnesia for the apparently typical grand-mal convulsions, which continue. No classical hysterical stigmata, but there are amnestic patches for disagreeable things, as a former hospital admission. These varying symptoms have now extended over a period of 24 years and to-day she is considered as recovered except for the convulsive habit.

CASE 8237.—K. A., a woman who had one sister insane. Sister has ideas of persecution to which she strongly reacts and is in a paranoid state. Personally K. A. was supposedly normal up to the age of five when her arm and leg were contracted on one side by "scarlet fever," and she also remained cross-eyed up to the age of 10. These conditions made her shy, but yet she made friends and attended school until the age of 15. Her father kept a saloon and boarding house and she assisted him. During her young girlhood she *had a love affair and the lover died.* Later she married at 26 and her first child came a year later. Following this she had 19 pregnancies, and at the time of admission—at the age of 44—had five living children, with 18 years difference in their ages. Eleven of the 19 children were born alive, and five survived. Her husband drank and her married life was hard and unhappy. Eventually she refused to eat, became excitable and talked vaguely of babies that were in incubators at Coney Island as hers; that poison is in the food; that she owns much property, and as a result was committed. On admission she thinks *the physician is her long dead lover and she is now a princess.* Electricity is put in her by the (great) man Edison because she is a princess. Her family is of royal blood and she is a changeling. Her dead lover disguises himself and variously identified people come and go. She wished to kill her real husband because he struck her and treated her dreadfully. Her make-up is perhaps a little inferior and the mechanism of the psychosis is that of a brilliant, joyous, regal substitute, wherein the long lost lover reappears and long repressed libido is set free to take the place of life's real actualities, where 18 years of tormented life with a brutal husband had made further normal adaptation impossible. A mechanism which while splitting the personality and recasting the fragments yet molded a complex of wishes fulfilled and the bizarre language then takes on the dignity of an actual life narrative, which, though entirely foreign to the patient's real life, was entirely acceptable and *understandable* to her.

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CASE 50190.—J. R. McK., a man whose father was a periodical drinker, mother very nervous at 68. Patient was not strong as a child, attended school till 13 and became a machinist in which trade he was efficient. He was twice married, the first time at 35, but the wife died two years later; then at *38 had an operation for varicocele* following which he began to dread to go out; then was advised to marry again which he did. Seven years later he developed the idea that this wife is unfaithful to him and makes violent demonstrations toward her in reaction. *He began to masturbate* and would have an outburst of anger toward his wife after doing so. During these attacks he would smash the furniture and continue excited for about three days. He seemed sleepy most of the time. Then eight years after the varicocele operation, and for at least one year sexually nearly impotent, we find him exposing his person at the windows of his house. Three years later he is entirely impotent and then feels that "people make fun of him—talked about him downstairs," etc. In addition to these ego-centric ideas, he spent much time in brooding over sexual matters although unable to have sexual intercourse. He was dangerous, as he thought his wife wanted to get rid of him and that every one in general was opposed to him. He neglected reading (which he had formerly done a great deal) and appeared dull and slept much. Retention tests poor. Believed his seminal fluid runs away in his urine. His efficiency is impaired by the constant obtrusion of these disagreeable thoughts into his consciousness. The whole picture seems to be fairly clear as to sexual ruminations which began following a varicocele operation leading to ideas of impotence. His relations with his wife were thus made difficult and masturbation appears as a substitution to a conflict already present. The faulty adaptation and substitutive reactions lead to considerable distortion of the disorganized personality shown in the low work efficiency. Whether a permanent readjustment through analysis and explanation can be obtained is doubtful; for while he may return to his normal, here comes in the neuropathic hereditary ground work—we have still only this poor grade, non-resistant brain stuff to proceed with.

CASE 39885.—J. M., a man whose father was a heavy drinker, but beyond this has a negative heredity. Patient experienced some difficulty in getting along at school; did not do very well in his classes. Later was temperate as to habits but masturbated. About the age of 21 was admitted to a state hospital. He showed no formal speech disorder, and said he used to be quite strong, but had worried over his sickness, at the same time while saying this appearing cheerful, and apparently had some disjunction between affect and ideation content. Orientation, memory and retention tests all well performed; insight nil. He was discharged improved a short time after admission. Diagnosis dementia præcox.

Eleven months later he is admitted to Kings Park because he is inclined to be seclusive and so upset as to be unable to employ himself. He cannot work, for if he has any tools in his hands he is afraid they may go through his body. He knew where he was and agreed to come here for treatment.

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The psychosis is a continuation of the one for which he was first committed. Physically he shows nothing definite. He denies any sort of delusions; said he felt depressed because he did not feel well. Complains of pain in the stomach and a feeling of distention. The chief feature is the obsession of fear of tools, which fear demoralizes his efficiency and prevents his working. The case is illustrative of those having features which, if viewed at one upset only, would be misleading or at least unsatisfying, for the continued history of the disorder seems capable of producing a dementia præcox symptom complex at one time and again a quite typical psychasthenia. But the one underlying process seems a broad-based mental disorder whose symptoms, however manifold, depend upon lack of mental adaptation and whose mechanism is essentially of a splitting type.

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SOME PSYCHOLOGICAL OBSERVATIONS IN THE INSANE.*

By MAX E. WITTE,

Superintendent, Clarinda State Hospital, Clarinda, Iowa.

When a patient is brought to us, amongst other pertinent questions, we are very apt to ask: When and how did the trouble begin? And the mother or wife, for it is usually a woman who answers, will say: "I first noticed that there was something wrong with him at such and such a time, but I had no thought it was insanity." On being more urgently pressed to state in what way disorder was first manifested, she will say: "There was a change; he appeared different," and no matter in what words she may express it, careful inquiry will reveal the fact that the first signs of mental disorder in the patient consisted in a marked alteration in disposition.

Now, if you will grant me that our disposition is our habitual mental attitude towards our environment, and has its foundation in our prevailing states of feeling, we may say that the first disorder in our patient was manifested in the sphere of feeling—feeling with its paramount influence on the will, and as contrasted to thought. Not only in insanity is the field of feeling primarily involved and disordered, but further study of the patient after he has come under our personal observation shows conclusively that this is fundamentally so. No matter what other fields of mentality become implicated, they do so secondarily, and as a basis of the psychical derangement remains the emotional disorder. Some forms of insanity show this more obviously than others, but even in those wherein it is not so obviously apparent close study will reveal some impairment or perversion of feeling. Perhaps most marked is this in manic-depressive insanity, which derives its generic name from this very fact. In the milder cases of this peculiar disease type, as you well know, there is in the maniacal state an expansive, exalted, happy state of feelings, and in the milder cases, with no disorder of thinking, thought is exuberant and facile. And this emotional elation is well shown in the region of

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the will by erratic, restless, and even frivolous conduct. On the other hand, in the depressed phase we find a prevalence of sad, painful emotions, with their characteristic inhibiting influence on thought and will. In the milder forms of depression thought and behavior are correct enough, but both are slowed. It is only in the severer degrees of the disease that delusions, illusions and hallucinations appear.

But it is in melancholia proper that we find most interesting, or at least most distressing, disorder of feeling, most interesting to me personally, since closer acquaintance with many tortured victims of the disease has wrought in me radical changes in certain psychological points of view. I formerly thought in consonance with certain eminent schools of psychology that feeling is subordinate and secondary to thought, indeed an effect of thought. For instance, in thought we contemplate a painful occurrence, either experienced now or recalled in memory, and are sad. In the distressed melancholiac this would mean, he conceives on the basis of disordered thinking the delusion of having committed the "unpardonable sin," and hence is harried by torturing anxiety, hopeless despair, and a sense of impending doom.

Now, as a result of critical studies in melancholia I believe the reverse is the true order of development of the melancholiac condition. If the precedence of a painful state of feelings to the distressing thought, *i. e.*, the delusions, can be firmly established it would as a corollary rehabilitate feeling in the tripartite realm of the mind, and give it primary importance by its power of selecting and directing thought, besides furnishing motive to the will. The order would now read: We feel sad, hence think painful thoughts; we let our extensors sag from deficient innervation, and lapse into a dejected expression and listless attitude.

This view would also favor the James-Lange theory of emotional genesis. More particularly is this so when we attempt to explain the occurrence of an emotional state following in the wake and as a resultant of a present experience. As you no doubt remember, the James-Lange theory holds that a particular state of feeling follows and results from certain well marked physiological processes which are a part of the emotional manifestation. In fact, the feeling is the effect rather than the cause of the physiological process, instead of the contrary, as has been usually

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held. For instance, in the feeling of fear we find a general depression of the vital functions; shallow, embarrassed breathing; weakened heart contraction; vascular disorder, as shown by pallor and small thready pulse; arrest of all digestive processes, even to nausea and vomiting, and a disorder of all excretions; profuse perspiration, and loss of control over bladder and bowels. All the foregoing are depending on functional disorder of the sympathetic nervous system, but the cerebrospinal system is also implicated, as witness the trembling of the limbs, the incoordination of movement, and the specific reaction in the facial muscles, giving in this instance the characteristic expression of fear. In the milder degrees of fear motor reacting and efficiency may be increased to some extent, but in the graver forms of fright and terror all motor innervation is inhibited, the sufferer is paralyzed —panicstricken we say. The heart weakens, even stops, and patient faints and becomes unconscious, and condition generally resembles if it is not identical with surgical shock.

Now, we believe the sequence is something like this: Something occurs and impresses a nervous mechanism operating below the threshold of consciousness, and which has its seat more particularly in the great sympathetic system of nerves, an heirloom acquired in the dim and hoary past by the race and transmitted to us as most useful to life and progress. This mechanism starts the functional changes in our organs, and sensory impressions from these, as well as altered chemical products resulting, influence and produce intracellular changes in the neuronic systems of the basal ganglia and the somatopsychic region of our cerebral cortex, which in our sensorium we experience as a feeling. Or, in a few words, and again employing our example, we suffer from shallowed respiration; a weakened heart; disordered vessels; arrest of digestion; excretory disturbances, and motor enfeeblement, and as a result, we fear.

That the bodily disorder precedes the mental effect becomes quite apparent when we study in comparison the emotional states in the non-insane, due to functional disorder of important organs, and similar states in the insane. For instance, I personally have been unable to observe a difference in kind between the sad state of feeling engendered by temporary derangement of gastric and hepatic function, vulgo the "blues," and the simple depression of

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manic-depressive insanity—the hypo-melancholia of some older classifications. I grant there is a difference in duration, for the one may yield to a dose of calomel, while the other is stubborn and resistive to treatment. But there is scarcely a difference in intensity, for I have seen as deep depression and despondency in one as the other. I will speak of this again when I come to consider the locus of origination of feeling.

In furtherance of my argument that feeling is an independent phase of the mind, and that in consciousness we can and may have pure states of feeling, at least in disordered mentality as we find it in certain forms of insanity, permit me to describe briefly three cases of melancholia as they happen to come haphazard to my attention. They are all women, all elderly, on the same ward; they suffer distressing sleeplessness, and the unspeakable torture of true melancholia, which time and again has driven each in desperation to seek relief in suicide. There can be no question as to the reality and intensity of a painful state of feeling which can thus override the one fundamental instinctive feeling of our being—the love of life. I may say further, each of these poor sufferers is entirely clear in consciousness, fully oriented, of an unimpaired memory, able to reason as well as ever, in no wise reduced in moral or religious feeling; in fact, not at all demented. Cases I and II are essentially alike, but Case II approaches Case III in some ways. Case III is also similar, apparently, but really different in an important particular.

Case I.—Æt. 40; single, domestic, and worker in a factory; Irish extraction; Catholic. Some insanity in the family. Habits good. Intelligence good. Melancholia (involution). Beginning of menopause. Is said to have had hallucinations of taste (probably complained of bad taste in the mouth; there is nothing of this present at this time). Trouble began two years ago. Patient is entirely clear and oriented, with an unimpaired memory and understanding, and there is positively no trace of any delusion. She suffers intense distress and misery and is very restless and agitated, weeping and wringing her hands in anguish, with facial expression of great suffering. She says she feels no bodily pain, though she has a feeling of oppression in precordial region. Close questioning reveals that her suffering is all in her feelings. She cannot explain why she is so tortured. She does not remember of any special wrongdoing. She wants to die, and from every indication she suffers fully as much mental pain as Cases II and III, and like them has a distinct lowering in the sense of personal worth, but, unlike III, does not explain it.

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CASE II.—Æt. 67; widow; Dane; 10 children; housewife; good financial circumstances; menopause at 50; Baptist. Hereditarily encumbered—father, aunt, son and daughter insane. Has been deranged off and on during the last 16 years or more. Made several apparent recoveries. Diagnosis: Melancholia (involution). Patient is profoundly depressed in feeling, though some variation in intensity is noted. She has made a number of desperate attempts at suicide by hanging, choking and poison. While the patient is clear and rational at all times, and has periods of short duration when she feels fairly comfortable, she suffers waves of indescribable misery and anxiety, during which she is intensely restless and agitated, moving about, groaning, and wringing her hands in nameless anguish. Her face is expressive of intense suffering. She has no delusions no illusions or hallucinations, and memory is clear and accurate. If asked if she suffers bodily pain, or has done some wrong or met with some injury, she says no; it is her feelings, she cannot "stand it," and begs the doctor to give her something to die. She has precordial distress, and during the height of the torture she is observed to press her hands over the abdominal region, although she denies having any actual pain there. She has a feeling of impending calamity, but does not know what, or cannot explain definitely. At times feels she will die, again fears she may not.

CASE III.—Æt. 62; single; Baptist clergyman's daughter; English; milliner. This attack began three years ago. Had first attack 15 years previously. Duration one year. No constitutional incumbrance. Habits good. Intelligence good. Melancholia (involution). Patient is clear and intelligent and of good memory and understanding, but suffers intense mental pain, and is very wretched and agitated, and unable to find rest and comfort anywhere. Facial expression, and her whole behavior, indicates extreme suffering, which rises at times to a pitch of frenzy, during which she screams as if in mortal anguish. She is very much reduced physically and suffers enteric irritability and diarrhœa at times. She complains of no physical pain, but that her feelings are so distressed, and is harassed by a premonition of impending doom, which she says she richly deserves, since she is possessed by an evil spirit, and has committed the great sin which cannot be forgiven. She has lost her chance of Heaven and is condemned to torment here and everlasting punishment in the hereafter. Questioning brings out no obvious misdeed. (She herself does not attach much importance to a confessed minor offence against chastity.) But she feels that she suffers on account of her great wickedness, and that she was born with it.

A comparative study of these three cases has been very interesting to me. In all these women the disease began with a profound disorder in the emotional sphere, and indeed this has continued so. If one were asked: What is the one predominant characteristic in these cases, the answer would be: Mental pain. But what gives the series especial interest is a glimpse at the

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genesis of conceptual disorder: namely, the delusion of the "unpardonable sin" in Case III.

The painful emotional state is equally severe and distressing in all three, but in Case I, who is least intellectual, a plain matter of fact woman, a Catholic, with the certain consolation and faith in the remission of sin by the priest after confession and penance, we find no attempt to explain her mental unrest and misery by misdeeds in the past. These have been confessed and forgiven; her thoughts are no longer closely associated with them, hence do not dwell on them. She has no delusions, but simply complains of feeling so wretched and restless.

In Case II, with more varied emotional experience in her religious life, we find, besides the misery and disturbance in feeling, a sensation of oppression in region of the epigastrium, and marked, even grave anxiety, with foreboding of calamity and doom, about which she is in doubt and uncertainty, a morbid mental state which would prove fertile soil for the development of melancholiac delusions, were it not that she is subject to respite. She, more than the others, has periods of remission in the intensity of her disorder, and even during several days or a week at a time she is quite comfortable. During these intermissions she is enabled to rehabilitate her mentality according to normal standards.

But it is in Case III we find, in addition to the suffering in feeling, also grave involvement of the sphere of thought. The delusion of having committed some grave misdeed, even the unpardonable sin, and also of being possessed by an evil spirit, is unquestionably reared on the morbid and painful state of the feelings as a basis, and certain well defined traits in her previous life and personality enter as factors. She is the most intellectual of the three, and as the daughter of a clergyman of an orthodox and straight-laced religion she early acquired and incorporated ideas of original depravity, obstruction to the Holy Ghost, and demoniacal possession with her stock of associations. Hence, when disease produced such a painful and torturing state of the feelings, to her logical faculties otherwise inexplicable, what more natural than that with her previous training in certain religious lines of thought she should endeavor to explain her suffering as punishment for sin, and the anxious foreboding as a foreshadowing of everlasting doom.

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Thought and feeling are in reciprocal relation. Feeling by association influences, colors, even calls up thought; thought, on the other hand, likewise by association of past experience in memory, gives rise to feeling. In this manner a vicious circle has been established in Case III. The morbid, painful feeling gives birth to the distressing delusion of being forever lost, which in turn revives and intensifies the already existing anxious emotional state to one of utter terror and despair. As is so characteristic in painful states of feelings, the vital processes of the body are depressed and disordered; the nutritional functions are impaired; appetite is lost; digestion is poorly performed; excretion is deranged and defective; respiration is shallowed, and circulation weakened. The patient is thin and emaciated, autogenic poisons circulate and influence the central nervous system, already suffering from deficiency of nutriment in the blood. The disorder is then not so simple as it appeared, but consists of disarrangement and impairment in the functions of all the important organs mutually interdependent as a closely linked chain for the carrying on of life and mentality.

Equally important and fundamental is the rôle played by impairment and disorder of feeling in other forms of insanity. But I can here only briefly refer to this as it is manifested in the genesis of dementia præcox, especially in hebephrenia. In the hebephrenic, for instance, the earliest and most persistent abnormal trait is "lack of interest." Now, interest is the close and intimate association of a thought and a feeling. We are interested in a matter in direct ratio to the degree of intensity of feeling invoked in us by the thought, and our reaction to it by the will is also dependent on this intensity. What is first noticed in the young hebephrenic is a lost of zest, animation, and ambition, and an indifference to matters of ordinary concern. This apathy or dulling of the feeling grows and persists as a cardinal symptom throughout the disorder. Emotional vagaries, or even normal manifestations, are most easily explained if we accept the James-Lange view of emotional genesis, and remember the close connection, I may say dependence, of feeling on bodily condition.

I am personally convinced, after considerable observation and study, that our feelings have ultimately their foundation in that same great nervous system in which the inception and maintenance

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of our life is founded, the sympathetic system, which governs and regulates automatically without the dictation of the conscious will, all the important vital processes—thus circulation, digestion, and nutrition, elimination, and, be it not forgotten, procreation—for in extension of my argument, remember the profound and far-reaching influence of our sexual life in the makeup of our personality. Indeed not far wrong is the popular psychology which speaks of the heart and the head when referring to feeling and thought respectively. The language of civilized man is full of references to the vital organs when speaking of the various feelings. Our songs (with music most expressive of emotional life) are full of it. While the stomach and other organs are not slighted, the heart is the most in evidence. We say "cordially," or in Saxon "heartily," when we wish to express intensity of feeling. We speak of a broken heart, though the one injured feeling to which it refers had its inception originally in the hypogastric plexus. Our sayings are the concentrated experience of our race. Furthermore, we can obtain abundant evidence to sustain our position in the field of pathology. The feeling of smothering and apprehension observed in the cases of melancholia quoted, notably in II and III, was, so far as could be determined, exactly like the distress and anxiety I have found such an alarming feature in angina pectoris. The feelings and sensations I experienced in suddenly beholding a beloved being in mortal peril promptly recalled in memory those of a solar plexus blow I received years ago from the pommel of a saddle when my horse fell with me.

In the etiology of involution melancholia we find the same factors observed by Abrams to be causative in splanchnic neurasthenia, or the "blues," *i. e.*, atony of abdominal muscles; reduced intra-abdominal pressure; engorgement of the great abdominal veins; asphyxiation of the abdominal nerve centers in the great sympathetic; hepatic venous engorgement, resulting in functional inadequacy, and consequently permitting the passing into the blood current of toxic principles (which are in health changed and rendered innocuous in the liver) to the distress of the lower ganglia and certain cortical brain cells. In the melancholiac we find all these conditions, only more pronounced and persistent, and besides he no doubt receives in his sensorium more or less

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emphatic and continuous messages of evil direct for the great solar, cardiac, hypogastric, or other sympathetic plexuses of nerves, though he may not be aware of it. It is significant that this particular trouble begins in middle life when the muscles weaken or become fatty, the abdomen flaccid and pendulous, permitting dragging on the mesentery and sucking in and stagnation of the blood in the great veins of the abdomen.

There is with me no doubt that the organic sensations, arising mostly in and conveyed in part at least by the sympathetic, play a fundamental rôle in the production of our feelings, as well as in the construction of our personality.

Constantly day and night messages of good, bad, or indifferent import are sent to the brain, and these produce changes in the lower basal ganglia, as well as cortical neurones, according to Flechsig and Lugaro, with whom I agree. Ordinarily, and in health, the result of this continuous bombardment remains below the threshold of consciousness, but it influences, nevertheless, our moods and fluctuating feelings, which are based thereon. The subconscious regions of our mind also extend down into and involve the great seats of organic life—ultimately the difference between the optimist and the pessimist, a Leibnitz or a Schopenhauer, for instance, is one of supra and subdiaphragmatic adequacy, or perhaps of efficiency of the sympathetic.

Feeling is a primary and fundamental ability of the mind. It had its rise in the first dawn of consciousness way back in the hoary past, when the oft quoted amœba became aware that some influence was favorable, hence agreeable, and another unfavorable, and, therefore, disagreeable to it, and took measures (motor reaction) in consequence. The ability to realize pleasure and pain, and to react accordingly, has been the one guiding and protecting principle of life. Long before the young babe has thought, or reacts to impressions coming from without, it is aware of what is conducive to its welfare, or its ill being, and responds by characteristic activities.

Feeling is given immediately in consciousness and may serve as the firm monument from which we take our departure in search for the Real. Descartes might more aptly, and with equal justice, have said: I feel; therefore, I am.

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THE LEGITIMATE USE OF PSYCHIC INFLUENCES IN THE TREATMENT OF THE SICK.*

By HENRY C. EYMAN, Massillon, Ohio.

In 1866 Sir James Paget wrote to Sir Henry Acland as follows: "What unsatisfactory cases these are. This clever, charming and widely known lady will some day disgrace us all by being juggled out of her maladies by some bold quack, who, by mere force of assertion, will give her the will to bear, or forget, or suppress all the turbulences of her nervous system." This is a confession of incompetency on the part of these eminent physicians. And how frequently to-day do we observe exactly these anticipated results. How many physicians present who have not had just the experience these eminent men feared? Do you know that we, as physicians, are largely responsible for the measure of success which has always accompanied isms and cults of all kinds? We are all ready to admit that the mind exercises a large influence over the bodily functions, but many of us have failed to harness this knowledge and utilize it to the full in the treatment of our patients. We do not quite agree with old Dr. Fowler: "Imagination makes sick or well *ad infinitum*," but we all do know "that if a man is so ill as to think he is ill when he is not ill, he is very ill indeed." It has been said that some physicians when they wish to imply that a patient's symptoms are unimportant, call them "nervous"; if they wish to ticket them as unworthy of consideration altogether they call them "mental," and if they want to brand them as quite absurd and out of the pale of human sympathy or medical effort, they call them "hysterical." Until recent years doctors quite failed to distinguish between imaginary ills and ills of the imagination. We who chance to be thrown daily with both these classes readily see the important difference. It seems very plain that the imaginary ills should be ills that a patient *had not*, and that ills of the imagination resulted from diseases which he *had*. When a patient imagines he is ill, the legitimate means of ridding him of this idea, whatever this may be, will effect a cure; but you will say how cure one not ill. Remem-

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ber "when one is so ill that he thinks he is ill when he is not ill, then he is very ill indeed." At the risk of being branded unorthodox I make this statement, that seven-tenths of the diseases treated by the physicians do not need drugs to effect a cure. A Baptist clergyman gives us this picture which will answer for the whole human race. "He is a worried and fretted and fearful man; afraid of himself and his propensities; afraid of colds and fevers, afraid of treading on serpents or drinking deadly things." We have always been loth to believe in the hierarchy of the mind. While all of us can give instance after instance where this most important fact has been thrust before our vision, yet we are prone to explain them away on some ground other than the influence of mind over matter. The public attaches extraordinary value to the "cure," and does not pay particular attention to diagnosis. In fact the thing which matters is, that, whereas John was sick, now he is well. He was in the slough of despond, away down in the valley of despair, now he is basking in the splendors of the sun-kissed mountain top. It is results the people want. The particular hocus pocus or formula by which it is brought about is not interesting, except as made so by the unscrupulous quack, with his incantations and his positive assertions. Now what makes this picture possible? Has quackery any real power which you do not possess? Or is it that his very boldness, his force of assertion is something to which you will not condescend? And to use Sir James Paget's words, is the patient "juggled" out of her illness? Now, if it be granted that the vast majority of the ills of mankind be due to fret and worry and anxiety and the fear of breathing deadly microbes, then the Christian Science faith must be credited with doing some good in the world. If he has put all fretting and anxiety under his feet he does have a victory. What does Christian Science do and how? "It enables a man to watchfully and diligently divert his mind from unhealthy channels and compel it to travel in healthy ones." And it will not suffice for us to dismiss this idea as ridiculous, absurd and without importance. Here again we must harness this modicum of truth and compel it to do legitimate work in harmony with real science in every other line. It was considered perfectly professional and proper for a physician a few years since to give 15 to 20 grains of calomel to the patient at a single dose, in order to relieve from sluggishness that

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greatly overworked organ, from a professional viewpoint, the liver: and equally as marvellous as some of the present day "isms" seem, the patient got well. If a Mrs. Eddy steps in, and, using a grain of truth and real science, and a ton of jugglery and pseudo-science is able to sound depths of the emotional life entirely unsought for by us, and in consequence not only attracts a large following, but in many instances does get results, I say if this is done, and we content ourselves with poking fun at their methods, and make no effort to separate, for edification of the people, the real from the false, then are we certainly culpable, and are really aiding the various isms and cults to thrive and flourish and, alas, frequently to destroy. The wise physician must grasp the underlying unity of the spiritual and material, and recognize that if the "body may and does influence diseases of the soul, so does the mind influence states and diseases of the body." The most eminent and successful physicians have all been psychologists. Many of our best practitioners are, perhaps, what we might term unconscious psychologists, aye, even unconscious hypnotists. Mere drugs without the soothing touch, the kindly encouragement of the physician in whom the patient has confidence, accomplish but little. Success or failure in a practitioner depends as much upon his expertness in moral and psychical treatment as on his skill with drugs. The personal equation of the physician enters into the treatment of every case, and often unconsciously so. I believe some of the greatest results in so-called psychic therapeutics are accomplished by physicians who do not themselves realize their mental influence over the patient. I may be pardoned if I refer to a few cases under my own observation. While in charge of the State Hospital at Newburg, I was one day passing through the wards with a medical friend. Upon entering one of the disturbed wards we found a patient lying on the flat of her back kicking and striking violently at the nurses who were trying to persuade her to arise and go out walking with the other patients. Stepping to her side I spoke kindly, but firmly to her; told her she must get up at once; that she was acting childishly, and that she should obey the nurses. Instantly she ceased her violent efforts, arose to her feet and announced that she was ready to accompany the other patients. My medical friend said to me, "Now what did you do, did you hypnotize her?" I had

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no knowledge of anything of the kind. Another day, in passing through the wards with a number of bankers, we entered a ward in which a young lad was crying out, and making facial grimaces and contortions in a very repulsive manner, which the attendant stated had been kept up for several hours. I spoke to him and asked him to come to me. He immediately complied, when placing my arms about his neck I explained to him that he was disturbing the ward, and injuring himself. He at once promised to cease, went to a chair, sat down and smiling pleasantly bade me good day.

My friends in this instance insisted that I had used hypnotic influence, but if so it was unconsciously done.

And so I might enumerate case after case of this kind, and so might all of you, but these will suffice. One other instance, illustrating the influence of suggestion upon the mind, and in consequence a modification of the function of the neuron. Ellen H., committed to the State Hospital as suffering from suicidal melancholia. She was apparently unable to talk, would wring her hands, walk the floor and had an agonized expression of countenance. At first she refused to eat. Gradually the condition of melancholia subsided, and after three or four months treatment she became fairly cheerful, would carry on conversation by means of pencil and tablet which she constantly carried with her. She was urged to talk, but insisted that she could not. She was even deprived of pleasures which she could have had for the asking, but would shake her head and refuse to make the effort. Would write her requests on a tablet, and when told they would be granted if she would ask for them, would sadly shake her head and relinquish the idea. This condition continued for fourteen months. We had thoroughly satisfied ourselves that the throat muscles and vocal cords were not diseased, and that her inability to talk was purely an imaginary condition. I had the assistant physician state to her that next day I would begin a treatment which would relieve her in 48 hours. Next morning, accompanied by several members of my staff, I went to her ward, and told her that after consultation we were satisfied we could cure her, but that she would have to go to another ward. Very solemnly we marched to a front ward, ushered her into a single room, and closing the door told her that the first lesson would be given next morning, and that she could enunciate monosyllables immediately there-

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after. These things she pondered on until next day. We visited her with much cheer, and immediately began to manipulate the throat muscles. Then firmly said to her, now you can say "yes." She said "yes" distinctly, and before the lesson was over spoke any monosyllabic word she was told to utter. We then told her to continue her efforts, and that by the succeeding morning she could talk as well as anyone. Next morning, when we reached the ward she met us at the door with a perfect volley of questions, and to use the expression of the nurse, "she could out-talk any woman on the ward." Now, was this charlatanry? No, it was but the application of suggestive therapeutics to the treatment of functional disorder. Every physician present to-day, at least suspects that he has something about him which is of value to his patient over and beyond the outward and visible sign of his faith in drugs. And there is a consciousness too in every actual or potential patient that there is something about his doctor that does him more good than the physic, which indeed he sometimes surreptitiously throws to the dogs. And the doctor he likes is the one he sends for, although Dr. X may have a greater scientific reputation.

Don't you know that you are sometimes surprised by the peculiar success and phenomenal rise of some medical brother, perhaps your classmate, and a man whom you know to be a mediocre, and are you not prone to ascribe his success to "cheek," or "push," or possibly some form of advertisement, which of course you abhor, and you absolutely ignore the real reason of his success which lies in his strong individuality, and the use of the mental factor in medicine, and whether consciously or unconsciously, benefits his patients' bodies by influencing their minds. It is his enthusiasm in his work that overflows, and is contagious. Genius is not mere capacity for hard work. Hard work done without enthusiasm never stirred the pulse of the world nor fired a human heart. "Genius is the child of enthusiasm, but it remains a child and dies mute and inglorious unless clothed with action and crowned with persistence." Mental force, why I tell you that intense optimistic thought is a mental dynamite which blasts an opening through impassable rocks. But you must meet the rock with the realization that the opposition is there. True optimism and enthusiasm will say, "This rock is formidable; it will require all my force to open a way through it, but I can and will." This is

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the true force in mental medicine. The Christian Scientist says, "There is no rock, no obstacle, the way is not closed. I will wait, I need not disturb myself, there is no matter." And while the false may survive and flourish for a season, truth must prevail, because the purpose of creation is that every atom shall work out its own individual destiny by individual effort, and herein lies the weakness of all the isms and cults which ignore this great overwhelming fact. Until this fact is recognized all isms must go down before the wheels of progress. Suppose the housemaid were told to clean the dirt from a certain room, and she would look at it and say, "I see no dirt, there is no dirt there, there is no matter," would her ridiculous statement be accepted, even though her employer be a leader in the cult? An undiscriminating optimist called upon a friend during a terrific downpour of rain, accompanied by much wind. He stalked into the best room, admitting with him a gust of wind and rain, and cheerfully stated that the day was exceedingly pleasant, while streams of water ran off his clothing onto the best carpet. While thinking about the disagreeable necessity of cleaning up after the caller had left, another caller entered with the remark, "A —— disagreeable wet day," prefacing his modifiers by a word not optimistic. A touch of profane pessimism makes the whole world akin occasionally. As a fair example of Christian Science optimism I should like to quote an incident related by Mark Twain.

"A little far western girl friend of mine, equipped with an adult vocabulary, states her age, and says 'I thought I would write a demonstration to you.' She had a claim derived from getting flung over a pony's head and landing on a rock pile. She saved herself from disaster by remembering to say 'God is all,' while she was in the air. I could not have done it, I could not even have thought of it, I should have been too excited. Nothing but Christian Science could have enabled that child to do that calm and thoughtful and judicious thing in those circumstances. She came down on her head, and by all the rules she should have broken it; but the intervention of the formula prevented that, so the only claim resulting was a blackened eye. 'Monday morning it was still swollen and shut. At school it hurt pretty badly, that is, it seemed to." So I was excused and went down to the basement and said, "Now I am depending on mamma instead of God,

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and I will depend on God instead of mamma."' No doubt this would have answered; but to make sure she added Mrs. Eddy to the team, and recited 'The Scientific Statement of Being,' which is one of the principal incantations I judge. Then 'I felt my eye opening.' Why dear, it would have opened an oyster."

I only give this because it so aptly illustrates my position on the subject of indiscriminating optimism, and how really meritorious methods may be brought into disrepute by the over zealous and the foolish. How far the emotions, imagination, expectation, faith, hope, joy and terror may control the bodily functions has not yet been determined. You all remember the story of the doctor who left his prescription on the table for a lady who suffered from pleurodynia, saying, "Put this to your side," and how the patient literally did so, instead of obtaining the prescribed plaster, but in spite of the mistake derived great benefit from the application. Ferrarius cured fifty cases of ague by slips of paper upon which he had written the word "febrifuge," and gave them to the patients with the instruction that they should cut off one letter each day. Many of his patients were cured by the time the sixth letter was cut off. Epilepsy by great mental shock may be cured. I have seen seizures aborted by sudden fright. A lady who had been a sufferer from epilepsy for a great number of years received so severe a shock upon beholding her beloved daughter die from the effects of dreadful burns, that she never had another attack. Clonic or tonic spasms may be produced or terminated by the imagination. Contractures of long standing succumb to the mental factor. Dr. Bertrand gives an account of a contracture existing for 38 years, only to be opened by a charlatan. A few years since I was called to see a young man in an adjoining county, who would have severe spells in which his fingers would lock around anything they happened to encircle at the time of attack, and no force seemed sufficient to unlock them. Electricity was tried, and the contracture was readily overcome. This condition had existed for several months before I was called, and so frequently did these spells occur that his family had bought a little electric battery, which was kept just to unlock his fingers. He very graciously had one of these "spells" while I was examining him. His fingers clinched so tightly that gashes were cut in the palms of his hand by the nails of the fingers. His brother immediately ran for the electric bat-

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tery. I heartily concurred in its use, and while the vibrator was allowed to hum as usual, I quietly disconnected the poles from the battery, and the happy result was accomplished the same as usual. I told him he could be cured by an operation, and advised them to go to a noted surgeon in Cleveland. I then wrote to the surgeon explaining my views of the case, and advised that an anesthetic be given and a scalp wound made. This was done shortly after, and until this day he has had no recurrence. Burton has made this pithy observation, "An empirick oftentimes, or a silly chirurgeon doth more strange cures than a rational physician." I do not know why he classes the chirurgeons with the quack. "'Tis opinion alone that makes or mars physicians and he doth best cures in whom most trust." Patients have been known to experience relief from great distress the moment the thermometer is placed under the tongue. There is no limit to the various kinds of ills which can be, and have been, cured by trick or jugglery or imagination, or the influence of the will, but the real diseases which attack and destroy cell tissue need something more than incantation.

> "The surest road to health, say what they will,
> Is never to suppose we shall be ill.
> Most of those evils we poor mortals know
> From doctors and imagination flow."

How sad that the writer of such beautiful verse should have died of fever at the early age of 34 years.

The time seems ripe for a new specialty, a specialty which shall include in its vast sweep every physican entitled to the confidence of the people. A specialty which will make physicians study men as men; to master the marvellous intricacies and dependencies of spirit, soul and body; and to be skilled to know when and how to call on the one to help the other. We can no longer ignore the spiritual element in man, and the almost absolute control it has over the vast number of diseases due to disorders of the circulation, the digestion, and what we might term neuronic kinks. The modern doctor must understand the pathology and hygiene of the intellect. There can be no doubt that the fields of psycho-physiology, psycho-pathology and psycho-therapeutics are as yet almost untouched. We have been too prone to leave the study of the influence of the mind over bodily functions, or the influence

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of the emotions, if you will, to the philosopher, the priest and the alienist. We must study not only the influence of the mind upon the body, but also that of the body upon the mind. We must search out and understand the mental and moral as well as the material causes of disease. Medical psychology belongs not only to the alienist or psychiatrist, but to the general practitioner as well. All honor to our hard working investigators who have added vastly to the sum of medical lore. I have nothing but words of praise and highest commendation for the general practitioner who, during the long country drives, works out many problems in clinical therapeutics, and to the original research work of the pathologist and bacteriologist I bow in admiration, but what we want more than any other thing at the present time is, in the language of Sir Crichton Browne, a "something corresponding to those splendid flashes of imagination which yielded the heliocentric theory of the planetary system, the theory of gravitation, the undulatory theory of light, the theory of evolution and the germ theory of infectious disease." Some fundamental and far reaching generalizations in pathology and physiology which would vivify and vitalize some part at least of the mass of dead material facts which have been accumulated. We must not allow trickery and quackery to thrive on false assumptions of their so-called powers of the mind, but in the language of the great Tuke, "We should not hesitate to utilize this force, to yoke it to the car of the son of Apollo, rescue it from the eccentric orbits of quackery, force it to tread with measured step the orderly paths of legitimate medicine."

We treat the stomach, the lungs and the heart
As if these three things were set apart;
We treat the kidney, the liver and feet,
And all the while ourselves we cheat.
We sneer at our brother (I beg pardon, please),
And haply think we are treating disease.
We work along the well trodden plan,
And somehow forget we are treating a man.

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THE ROLE OF THE NERVOUS SYSTEM AS AFFECTING THE SYMPTOMATOLOGY OF DISEASE, AND THE INFLUENCE OF DISTURBANCE IN ITS FUNCTIONS ON MORBIDITY.*

By H. A. TOMLINSON, M.D., St. Peter, Minnesota.

Through a number of years of observation of the symptomatology of disease, both in the sane and in the insane, I have noted and recorded certain manifestations that seem to me to vary in their incidence and prominence according to the condition of the general nervous system in the individual, and to bear no definite relation to the disease condition present or to be influenced by its severity. These clinical observations have been supplemented by studies made post mortem; so that there has been the opportunity for comparison between the symptoms, physical signs, and other evidences of morbidity, with the disclosures at autopsy. The conclusion has been reached, as the result of these observations and comparisons, that the nervous system has a more considerable influence than is credited to it usually, in determining both the symptomatology and the morbidity of disease in the individual, and, that, therefore, a careful study of the functional capacity of the general nervous system should be an essential part of the examination of the person who consults us; and particularly so if he is suffering with chronic disease. I do not mean that the examination should contemplate only the routine search for evidence of sensory or motor involvement, but that our efforts should be directed principally to the determination of the potentiality of the nervous system as a whole.

It is a matter of common observation among the insane, that the subjective symptoms of disease are never conspicuous, and may be absent entirely.

We have numerous records of the disclosure of conditions post mortem, of which there was no subjective sign during life; and also of the maintenance of fair health and considerable activity in the presence of disease conditions that, among the sane, would have a very painful sequence of symptoms, and an early fatal

* Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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termination. To illustrate: Among the demented insane who are tuberculous, the subjective symptoms of phthisis are practically absent, and the morbidity of the disease is much less. It is not at all uncommon to have persons committed to the hospital with well-advanced pulmonic phthisis, that has not been recognized, or presented symptoms sufficiently marked to attract attention from the mental disorder. To quote from a paper by the writer, on disease of the lungs among the insane: "The peculiarities that mark the progress of phthisis in the insane are the absence of pain and dyspnœa, the infrequency of cough, hemorrhage and expectoration, and the general absence of symptoms referable to disturbed respiration; our attention being called to the case by progressive loss of weight, weakness, emaciation, elevation of temperature, and sweating. The course of the disease is very greatly prolonged, as the rule. Even after the patient is put in bed, he may continue a merely vegetative existence for a year or more; and, post mortem, the anterior margins of the lungs only will be found to be crepitant." Again a patient may come into the hospital very much disturbed and sleepless; and if these conditions continue he will become more and more emaciated; especially if his disturbance results from painful impressions through the special senses, in spite of the fact that he may take a large amount of nourishment. However, when mental deterioration reaches a certain degree, even though the disorder continues, the patient begins to gain in weight and strength, the digestion improves and the bowels move regularly. That is, so soon as the higher functions of the brain are suspended, and the dominance of the psychic element removed, the vegetative organs tend to function normally. On the contrary, in general hospital experience, and in private practice, it is not at all uncommon to find both the subjective symptoms and the morbidity of disease out of all proportion with the extent and nature of the organic involvement. Indeed the involvement of the nervous system not only increases the severity of the illness, but renders the prognosis more uncertain. It is true also that the man with considerable clinical experience, who has the opportunity to become familiar with the family history of his patient, and to know how he reacts to the untoward conditions in his environment, will be governed largely, both in his recognition of the morbidity

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of the disease process in the individual, and his prognosis as to the outcome, by what he knows of the influence of the higher function of the nervous system upon the somatic activities. He may not consciously make a formal analysis of these relations, but he appreciates them, as is shown by his management of the case.

The writer has had the opportunity to observe the incidence of tuberculosis among milch cows for a number of years, and also the development of tuberculosis in a herd of deer. The herd of cows, a mixture of thoroughbreds and grades of all kinds, had been under observation for a long time. They were classified, for purposes of observation, according to the evidence of nervous phenomena, as shown by the disposition, response to food, environment, and the attitude of the caretakers upon the secretion of milk. It was found that those animals that were thoroughbred, and particularly where the ancestors were known to be excitable and unruly, succumbed most promptly to tuberculosis; also that the highly bred animal could be very easily upset, with loss of appetite, suppression of the milk secretion, and the development of diarrhœa of partly digested food, if subjected to excitement from rough or careless handling; whereas, the ordinary scrub animal, used as a control, remained comparatively unaffected. The herd of deer referred to had for a long time been maintained in good condition by the infusion of new blood. Then for a number of years, inability to get a buck from an outside herd resulted in persistent inbreeding.

The deer were and had been kept for a number of years in a yard, where, in the spring and after heavy rains, there was overflow from the barn yard. Three years after the inbreeding began, a doe and two fawns died, and were found to be tuberculous. Within five years the herd was exterminated. Similar phenomena with relation to inbreeding and susceptibility to untoward influences have been observed among plants in the field, the greenhouse, and in the garden.

Numerous examples might be given from our case records of the converse of these tendencies; that is, the modification of the morbidity and mortality of disease among those in whom the so-called higher psychic functions have been more or less completely eliminated by dementia. The following abstract from the

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history of a conspicuous example will suffice: C. S., who had been working regularly daily for 25 years, who had never missed a meal or complained of illness, was noticed to be weak, and suffering with dyspnœa. He complained of pain in the chest, and the bladder was found to be empty. He soon began to vomit, the lungs filled, and he died at 10.15 p. m. Aside from the evidence of renal involvement, there was found in the stomach wall along the greater curvature, a tumor involving the pyloric end of the stomach. The tumor was a carcinoma. The balance of the stomach wall was thickened and infiltrated with fat. There was carcinomatous involvement of the pancreas also. The changes in the kidneys were, as was to be expected, amyloid; while the heart and lungs showed marked fibroid change.

Gaskell[1] says: "The great factor in evolution throughout has been the growth of the central nervous system." I would add to this statement the evidence in biology that the functions of the central nervous system have evolved as the need for them has developed, and that the differential morphology has been determined by the functions of its parts, just as the relations of its mass have been fixed by the development of its bony envelope. Further, that while there is no morphological difference between the cellular elements in the central nervous system in the newborn child and in the adult, there is a very great difference in their functional capacity; and this functional capacity varies widely between individuals, with the result that the incidence of disease, and the morbidity of disease conditions, will be influenced greatly by the potentiality of the nervous system in the individual; that is, by his power of resistance. A group of individuals living under similar conditions respond individually very differently to the morbidity of disease conditions present among them, and we accept this fact without inquiring into its significance, just as we are prone to attempt the formulation of a diagnosis of the incidence of disease by studying the organ most conspicuously involved, instead of investigating the organism as a whole.

The part played by the nervous system in the symptomatology of general disease is usually either misunderstood or ignored. General practitioners and those specialists whose work brings

[1] Gaskell: The Origin of the Vertebrates.

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them in contact with the motor and sensory manifestations of disease in the nervous system, rarely take into consideration the relation of the higher functions of the general nervous system to the disease they are called upon to treat, or the influence of the general disease upon the special functions apparently involved, their constant reaction upon one another, or the influence of lowered nervous tone in retarding and sometimes preventing reaction from general somatic disturbance or special visceral implication. The nervous system is the avenue through which disease becomes apparent, and the morbidity of its incidence will be in proportion always with the extent to which the nutrition of the nervous system is interfered with. This is well illustrated by the effect of acute intestinal intoxication upon the nervous system, and the intoxications accompanying chronic somatic disease, particularly disease of the kidney. It is shown also in the so-called trophic involvement of the eye and the joints, after severe exhausting disease in childhood and during adolescence, where the history of the case shows that there is instability in the nervous system, as indicated by weakened resistance to the incidence of disease, or the untoward effect of conditions in the environment.

In the distribution of labor among the different vital organs, each one either furnishes its share toward the nutrition of the whole, acts as a carrier of nutriment, or is engaged in the elimination of waste material from the organism; while the nervous system, taking no direct part in any of the vital processes, directs them all, yet is entirely dependent upon the rest of the organism for the means to maintain its activity and eliminate the waste involved. It follows, then, in order that the nervous system may maintain its integrity, all of the vital organs must function normally; and as the corollary, that if they do not fully perform their functions, the nervous system must suffer to the extent that it is deprived of nutrition, or fails in having its waste products carried away. Consequently, if such impairment results, we need but to consider the biological relations of the nervous system to appreciate that the power to direct the somatic activities is lessened, and the other organs are further prevented from functioning normally; while any one that is diseased will have its potentiality further reduced by the impairment of nervous function, and will, in its turn,

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to that much greater extent interfere with the proper functioning of the nervous system as a whole. While unicellular organisms have a nervous organization, only the comparatively complicated multicellular organisms have a central area with the functions of correlation, co-ordination, and direction. Therefore there persists in each organ in the most complicated organism a cellular automatism that enables it to maintain its activity; and this fact accounts for the belief, so strongly asserted, and apparently demonstrated, that the persistence of functional activity in certain organs, after they are separated from the central nervous system, argues, or even proves, that these organs are independent of the central nervous system in their functioning. It is true also that experiments on the lower animals would tend to strengthen this belief; because, when they are deprived of the influence of the central nervous system, the somatic and even the general sensory and motor functions continue to be performed apparently normally. However, in this conclusion the facts of evolution are ignored, and there is the fallacy that the lower and the highest are compared without experimental evidence that the highest will respond as does the lower. To quote Gaskell[2] again: " . . . the law of evolution teaches that in all cases brain power wins. . . . In all cases, upward progress is associated with the development of a central nervous system." Besides, it is well known that in the highest forms of animal life the central nervous system cannot be separated from the spinal without destroying life. When we compare the new-born child and the lower animals with the fully developed human being, with regard to either the morphology or the functional capacity of the central nervous system, we cannot help but see that the whole tendency and direction of development has been toward the control of the somatic activities, and their domination by the higher functions of the brain. It would appear, then, from these observations of the relationship of the nervous system with the rest of the organism, that while the visceral disease may be the most conspicuous, it is not the most important, because the persistence in the involvement of the nervous system is the main factor in keeping going the constitutional disturbance; for we must not forget that we recognize disease conditions by

[2] Gaskell: Vide supra.

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their general effects, which we see first, our attention being called to the special organ involved by the perversion in general conditions the result of its aberrant functioning. Furthermore, we recognize the return to the normal in the functioning of the special organ by the subsidence of the general symptoms. These general symptoms, too, are most commonly manifestations of disturbed or perverted nervous functioning, such as weakness, pyrexia, headache, pain, insomnia, restlessness, irritability, and emotional disturbance.

The simplest manifestations of disease that we are called upon to deal with are the general disturbances connected with indigestion and constipation. Beginning with children, because in them the nervous system is most unstable, I need not tell you how widely different will be the degrees of general disturbance produced by the most simple perversion of function, varying from restlessness, pain and vomiting, with slight fever, to hyperpyrexia, meningismus, convulsions, coma, and even death. Why this difference? Observation will show that it results from varying degrees of instability in the nervous organization of the child; so that the toxic substances, in the most stable nervous system, act as an irritant only, while in the most unstable, the toxemia produces violent explosions of nervous energy, exhaustion and paralysis. The exanthemata, in their turn, produce widely differing degrees of nervous disturbance among children, and we commonly say that in this or that case the nervous symptoms were most marked. But why? Suppose, instead of contenting ourselves with the observation of the immediate disease condition, we study the history of the child from birth, the character of the labor in which it was born, the condition of the parents at the time of conception, the health of the mother during pregnancy, and while she is nursing the child, the life history of the parents and their relatives, both direct and collateral, the history of the first two years of the life of the child, both with regard to the presence of conditions that disturb nutrition generally, and of physical disease accompanied by prolonged high temperature; we will find that, just as the children differ widely in the proportion of constitutional or acquired causes of irregular or unstable development, there will be the varied manifestations of nervous involvement. The plastic cerebral mass reacting more and more excessively

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and to slighter stimuli, according to the degree of instability in the constitution of the nervous organization. It is well to bear in mind also that excess is as much a defect as is deficiency, and that the most highly organized is the most unstable; so that precocity, either physical or mental, is the evidence of imperfect organization. During the whole period of development, up to and beyond puberty, the disturbance of the nervous system is a constant factor in any form of general disease, and its manifestations are conspicuous always. During the two principal epochs in the development of the child, this is especially marked, *e. g.*, during the second dentition and at the period of puberty. Often at these periods the foundation is laid for arrested or irregular development, because of the failure to recognize the relation of the nervous system to general disease, and the interdependence of perversion of function common to them both.

Maudsley[1] says: "How far each visceral or thoracic organ can, like the sexual organs, determine its specific mood or tone of feeling directly, and indirectly its accordant manner of thought, and how far therefore each may determine the character of the dream of sleep or the delusion of madness, it is impossible to say with any certainty. But it is conceivable that all visceral organs may have their several relations with modes of feeling, as definite and constant in character as the relations which the special senses have with forms of thought. Certainly the moods of feeling and thought which accompany disease of the lungs are very different from those which accompany abdominal disease; and inflammation of the gastro-intestinal mucous membrane, notably occasions a gloom and anxiety which are not felt in inflammation of the bronchial mucous membrane. Speaking generally, there is a tone of despair in disease of the abdominal viscera. The surgeon who, having performed an operation upon the abdomen, has in mind the possible occurrence of peritonitis, views with apprehensive alarm a look of anxiety in his patient's countenance, before he finds signs of local inflammation. Hitherto the mental symptoms of bodily disease have not been studied systematically, and one may search through treatises filled with elaborate description of symptoms, courses and morbid anatomy of them and not discover

[1] Maudsley: The Pathology of Mind, p. 153.

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that they have any mental symptoms at all. Nevertheless patient and accurate observation of them might be of great scientific value."

The history of the primary degenerations occurring during adolescence which come under our observation, abundantly proves this relationship between general conditions and perversion of nervous functioning, the beginnings of which are seldom recognized, and even if recognized, not appreciated until too late. Irritability and restlessness, headache, violent explosions of temper and imperious wilfulness, with incapacity for continuous effort tell their story, as do their opposites: lassitude, dullness, stupidity with confusion, perverted appetite, constipation and abnormal sexual excitement. Happily these conditions are usually temporary, but often, unfortunately, they subside for a time only, to reappear in exaggerated form during late adolescence and early adult life, as concomitants of disease of the pelvic organs in women, manifesting themselves in neurasthenia and hysteria; although some women escape until the exigencies of social competition or the strain of maternity bring on some form of nerve storm or permanently sap the resistive power of the nervous system. In men the results are less varied in type, but more disastrous in themselves. The craving of the unstable constantly warring nervous system gives its victim no rest, with the result that he yields easily in every direction; the morbidity of any disease condition is increased, he becomes the victim of alcohol or narcotics easily; his lack of self control leads him to sexual excesses, with the resultant deterioration, and the development of chronic degenerative changes. Numberless minor perversions occur that become apparent only when looked for, and which are accepted by the family and friends as a matter of course, because they have become used to them. The imperious will that results from the inability to appreciate anything except in relation with self, enables this class of people to dominate their surroundings, and their eccentricities are accepted as a matter of course without thought as to their origin. How do these conditions come about, and why are they so important as factors in relation with visceral and general disease?

I believe it may be accepted as a fact that the principal result of modern social conditions has been the disproportionate development of the nervous system at the expense of the rest of the

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organism, without a corresponding increase in vegetative capacity; and the result has been that this unequal development has lessened the vitality of the organism as a whole, and lowered its resistance; while the nervous system requiring a disproportionately large share of nutriment, and failing to get it, has its potentiality lessened and is therefore more unstable without normal relation to the rest of the organism, or, in physiological terms, its irritability is increased, while its capacity for reconstitution is lessened, the result being the continuous tendency to react excessively to ordinary stimuli.

Such being the case with ordinary conditions surrounding the individual, how much greater will be the effect when the conditions are extraordinary?

Besides, as has been abundantly proved by investigation, these conditions that exist as defects in one individual may be produced temporarily by a state of the organism that is sufficient to impair its vitality, and derange the relational activity of the different organs. Even a high temperature, if prolonged, will bring about a complete neurasthenia, while autointoxication from the retention of the waste products of retrograde metabolism, may and does bring about the gravest forms of disturbance in the organism, simulating, and even producing, if persistent, all forms of organic visceral affection, especially in the heart and kidneys.

The fact that the morphological changes in the cortex of the brain and the spinal cord have not been systematically studied in general disease resulting in death, leaves us practically in the dark with regard to the presence or absence of morbid histological changes, and I have not been able to find any reference to bacteriological study of the cerebro-spinal fluid. Until these two methods of study are carried out systematically, without regard to the nature of the disease or the apparent cause of death, there will be no definite knowledge concerning the changes in the nervous system in general disease.

Some years ago the writer, in the course of some experimental work, produced the simulation of different forms of somatic disease in rats and rabbits, trying particularly to imitate the physical conditions present in delirum. Post mortem without regard to the disease condition, the same morphological changes were found, in proportion always with the extent of the exhaustion. That is,

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when waste overtook repair, with the consequent failure in reconstitution, there were definite morphological changes, without regard to the cause of the exhaustion. It is reasonable, therefore, to assume that this process of cell exhaustion is going on in every individual suffering from disease, varying in degree according to the amount of interference with nutrition, and aggravated by any source of overstimulation of the nerve cell; while the further effect will be intensified by the reaction resulting from the impaired functioning capacity in the diseased organ. This is especially so if the source of failure in nutrition and the cause of autointoxication are in the alimentary canal. Every practitioner of medicine knows how important free movement of the bowels and activity of the skin are to comfort and sound sleep, in patients suffering with severe illness, and how doubtful is the prognosis when the patient cannot digest and assimilate food. It is well known also how rapidly the man goes to pieces, when he tries to goad the nervous system to renewed activity by the use of stimulants, and tries to relieve the strain by further destroying the capacity for reconstitution in the cerebral cell by paralyzing it with sedative drugs so called.

I believe, from my observation and experience, that the study of disease in general should include the study of nervous disease, because the study of nervous disease is, in its broadest sense, the study of general disease. For the same reason, the study of general pathology is absolutely essential to the understanding of the principles upon which the study of nervous disease should be based. This knowledge is necessary for the appreciation of the relation between the nervous system and disease in general, and for the understanding how the inherent incapacity of the nervous system may influence the symptomatology and morbidity of disease.

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THE NATURE OF METASTATIC TUMORS OF THE THYROID.*

By ADOLF MEYER.

A number of years ago there appeared several reports of metastases of normal thyroid tissue or of adenoma of the thyroid gland among which the case of Cohnhein (Virchow's Archiv, Vol. 68, p. 547) has received a criticism by von Recklinghausen (Virchow's Archiv, Vol. 70, p. 153). It may be that the following case which came under our observation may throw some light on this controversy inasmuch as it was at first thought that the case was one exactly like Cohnhein's, whereas, on further investigation, it proved to demand the explanation that Recklinghausen had given.

Born in 1837 in Germany, the patient was admitted to this hospital August 10, 1895, because "she neglects her family and children, uses obscene and vulgar language, and because she had fear of poisoning and walked about aimlessly." She had been a healthy woman up to a few months previous to admission. She had come to this country to marry the widower of her sister.

On admission (August 12, 1895), she appeared quiet and rational, but homesick on account of her inability to express herself in English.

The next note was made January 4, 1896, and reports of a tumor in the upper part of the *right temporal and frontal regions;* there is a bulging of the scalp over a smooth painless tumor, hard at its base and soft, even fluctuating, at its height. The circumference is firmly fixed on the skull; the skin over the convexity is reddened. The tumor is about 10 cm. in diameter. It first *appeared about October, 1894,* and had then the size of a quarter dollar. Of late it has grown more rapidly. There is some *œdema of the right upper eyelid,* of the lower temporal region and of the scalp posterior to the tumor. The *thyroid* is *enlarged,* mostly on the left, and forms a mass about 8 cm. in the transverse diameter. Close to it, and probably continuous with it, though apparently independent, just *above the clavicle,* there is a *glandular tumor* 4 cm. in diameter. It moves with the thyroid in swallowing. The surgeon refused to operate.

January 25, 1896, the patient had an *infraction of her right thigh,* probably just outside the capsule. She slipped a little without falling, and then felt that the thigh gave way. Extension was applied. A month later the right thigh was distinctly enlarged in the region of the tuber, and painful.

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* This paper forms contribution number six of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the superintendence after 20 years of service.

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No union was obtained. The "callus" remained large and painful. During the summer she also complained much of pain in the epigastric region. The tumor of the head increased, and from October the right eyeball began to be protruded. An *arterial bruit* could be heard over the tumor from the ear to within about 5 cm. of the sagittal line. In December the pain in the thigh and near the cardiac end of the stomach and the protrusion of the right eye were more marked.

In February, 1897, the *tumor of the head* had increased to the size of 9 x 12 cm.; it was then somewhat nodular, firmly fixed on the skull; the skin was adherent and red; pressure only occasionally painful. The œdema extended over the right eyelid, cheek, temporal region, and behind the tumor to the bregma; the right eyeball was markedly protruded, and the conjunctiva inflamed. The *glands* of the neck had also increased into one solid mass; and also the right hip, which was very painful, had increased considerably in size. In the left third and fourth interspaces the breathing was slightly bronchial. A *systolic murmur* was present with slight extension of the dullness beyond the nipple-line. The pulse was intermittent. A small sacral decubitus had formed.

February 27, 1897 (after a cleaning of the decubitus with creoline?), the patient had begun to speak of there being *smoke in the room,* that people were in the basement who wanted to kill her, and take her downstairs at night and try to smother her. These fears persisted to the end; but the patient was able for a long time to read short stories, talked otherwise sensibly, but was much absorbed by her pains.

May 31, 1897, *vomiting* with increased pain in the epigastrium appeared and it could not be relieved much. She died with a final temperature of 100° June 3, 1897.

The autopsy was made seven hours after death. Body (Fig. 1) of a medium-sized woman, emaciated, with a decubitus of the size of half a dollar over the sacrum. Rigor mortis marked. Very little post mortem lividity.

The *tumified area of the head* extends from the zygomatic arch and the mastoid line to near the median line at the hair limit, to the level of the bregma, with the highest prominence, and with an additional elevation of the size of a hen's egg almost back to the vertex. The hemi-circumference from the glabella to the occipital protuberance is 25 cm. on the left and 29 cm. on the right; the vertical lateral outline of the tumor is 21 cm., the length from the vertex to the zygoma 23 cm. and the horizontal curve 17 cm. The left lobe of the *thyroid gland* is moderately enlarged, but extends into a large tumor of the size of an orange above the left clavicle. The right thigh is bent outward considerably and shortened. The distance from the superior spinous process to the internal malleolus is 82.5 cm. on the left, and only 71.5 cm. on the right.

Panniculus adiposus reduced to a thin yellow layer. Muscles very pale. Abdomen slightly distended. No fluid in cavity. *Stomach* reaching to within three fingers' breadth above the symphysis, and distended with gas and fluid, under the left hypochondrium pushing the diaphragm up to the

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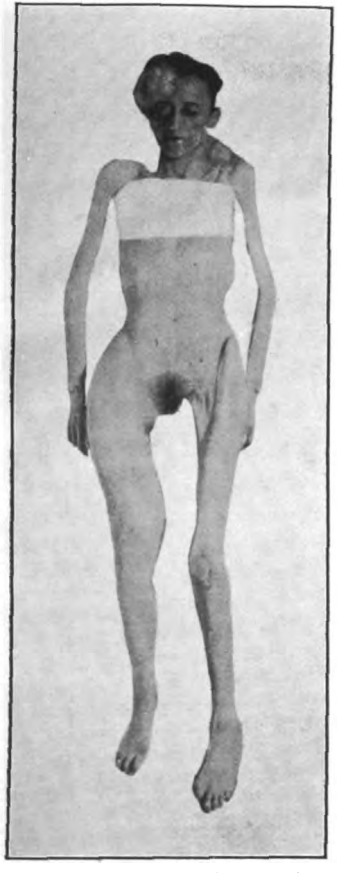

FIG. 1.—Picture of patient showing the thyroid tumor, the glandular mass on the left side of neck, the tumor over right side of skull and tumor of the hip joint.

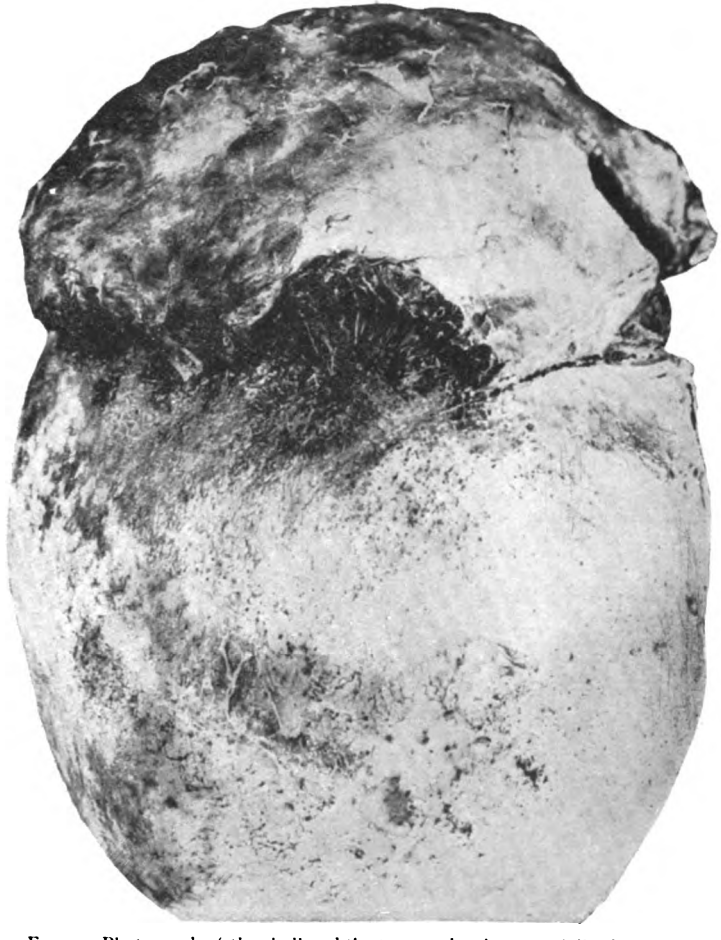

FIG. 2.—Photograph of the skull and the tumor, showing especially the quill-like osseous thorns extending from the bone to the outside capsule of the tumor.

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fifth rib, and the spleen far back and upward. *Pylorus* wide open, distended, leading over into the distended duodenum. Beginning of the small intestines collapsed, but not strictured, containing very little fecal matter. Colon exceedingly thin between stomach and the large mesentery. Diaphragm on right extends to the fifth interspace.

The lungs do not retract. The left one is perfectly free. The right one with *adhesions* along the posterior aspect of the upper lobe.

Left lung 460 gms. with three rather *large bronchial glands,* the continuation of which extends into the hylus of the lung. Apex rather œdematous, also the lower lobes, but containing air throughout, nowhere especially injected. In the posterior part of the lower lobes the pleura contains a *warty excrescence* about 3 x 5 mm. Another slightly smaller, 2 x 4 mm. above it. Swelled glands around the bronchus are well circumscribed against the lung tissue. One bronchial gland discharges white milky fluid. No caseous material; appearance of not-softened glands is that of simple hypertrophy.

Right lung, 540 gms. with much larger *bronchial tumors.* In the anterior lower border of upper lobe there is a slate-colored sloughing focus. In the lower lobe there is one focus of tumors along the course of a bronchus. No pneumonic foci. The largest bronchial gland is softened in the center containing a dull red-colored somewhat gelatinous substance, the wall being white, with a few pigmented septa.

Little fluid in the pericardium. *Heart* of moderate size. Weight 234 gms. Anterior wall of right ventricle with a considerable number of white spots. Muscle of right ventricle 2 mm.; left ventricle 11 mm. Beginning of aorta smooth with very few small white spots.

Spleen of moderate size without any tumefaction, rather pale. Weight 122 gms.

Left kidney 74 gms., small, capsules strongly adherent, cortex pale, also papillæ with several retractions and a few retention cysts.

Right kidney 72 gms., also small, very flat, substance less pale, cortex broader, no cysts observed, and hardly any retraction; capsule not adherent.

Liver of normal size, slightly friable, otherwise normal.

The *external iliac lymphatic glands* and several mesenteric glands are very greatly enlarged, the one lying at Poupart's ligament the size of a closed fist, the others from that size down to the size of a large English walnut; upon section it was seen that the centre had undergone *softening.* The *tumor of the thigh* consists of a large, partly ossified, encapsulated mass in which the fragments of the femur are embedded.

The *skull* is removed after a horizontal section through the left half, and right posterior quadrant, after the scalp had been prepared off from the tumor through the whole extent. The rest of skull is chiselled off. It is thin and rather soft. Weight of the calvaria plus tumor 778 grms. Where the tumor was torn off from the skull there were very *peculiar spicules of bone extending from the skull to the superficial capsule* (Fig. 2). The skull, together with the tumor, comes off easily.

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The *dura* over the left hemisphere very tense; *over the right hemisphere uneven and infiltrated* in an area extending from in front of the upper end of the helix almost to within 2 cm. of the longitudinal sulcus, and 4 cm. of the anterior end of the frontal lobe. The *right olfactory bulb is exceedingly small;* the tract, however, is not gray. The bone of orbitas cancellous. The brain with the subdural tumor mass weighs 1309 gms.

On cutting off the frontal lobe *no distinct degeneration of the centrum ovale* was noticed. The pia is slightly adherent to the nodular surface of the *tumor;* the right temporal and the foot of the central convolutions are compressed, although not softened. The depression extends upward in front of the precental sulcus, up to 1½ cm. from the falx, and to within 3 cm. from the anterior pole of the frontal lobe, turning then to the right without reaching the orbital surface. The *tumor* extends into the orbita on the external side only, there forming a mass like the one of the tumor of the convexity: well injected, uniformly deep, muscle-colored, soft, rather friable tissue, with spicules of bone, extending from the dura into the tumor, just as fishbones. On the border of the tumor, especially behind on the convexity, there is an elevated ridge of bone with spicules adapted along the periphery of the tumor. *The dural tumor has no bone spicules,* is slightly lobular and dark colored.

The *tumor of the neck proves* to be a great enlargement of the left lobe of the thyroid. The right lobe is about walnut size, slightly lobated and with easily visible pearls of colloid substance. The middle lobe is distinctly enlarged, more whitish and with more of the appearance of a kidney, *i. e.,* fibrous tortuous strands pass toward the surface into the most superficial white and dense cortex-like parts, which have only few fibrous septa. It is slightly divided into lobes—but much thicker than the cortex of the kidney and less sharply marked off. The tumor shows practically no colloid globules. The pomum adami is distinctly turned on the right. The breadth of the whole thyroid is 10.5 cm., the depth 7 cm., and the height 6 cm. It shows nowhere cystic degeneration, only in the center it is more fibrous and slightly calcareous.

Immediately above the bifurcation of the trachea there are several large bronchial glands from 3 to 6 cm. in diameter. On cross section mottled with pigment and showing a fibrous or softened center.

Anatomical Summary.—Tumor of the left lobe of the thyroid with metastatic invasion of the bronchial glands and of the lymphatics of the right lower pulmonary lobe; a tumor of the periosteum of the right frontal bone with bone spicules, and of the corresponding part of the dura without bone spicules, but with partial softening of the underlying cortex. Tumor of the right femur with infraction and invasion of the inguinal glands. Milk spots of the pericardium; old adhesions of the right lung. Aspiration pneumonia of the right upper pulmonary lobe. Distension and descensus of the stomach. Cysts of left kidney.

The *study of the sections* of the various tumors showed that they all bore a characteristic relation to the thyroid gland.

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The *right lobe of the thyroid* presents throughout a somewhat atypical thyroid structure: In a stroma of very scanty fibrous tissue there are numerous vesicles with one layer of mostly flattened cells inclosing a colloid mass or a relatively empty space, roundish, or irregularly outlined; many of the groups of vesicles look as if they had undergone a process of subdivision.

The *middle lobe,* which has a fibrous, partly calcified center, and also the *left lobe,* is considerably altered. The vesicles are smaller and not plain everywhere, and usually surrounded by atypically arranged cell-heaps. The structure suggests a transformation of *adenoma* into *carcinoma.* In some parts the vesicles contain normal colloid substance; in the larger part of the tumified thyroid there are, however, the just mentioned atypical cell-aggregations.

The *tumor of the skull* presents also a varying appearance. For the largest part of it has typical vesicles with colloid contents, resembling normal thyroid structure of the text book rather than even the right lobe of the thyroid; the vesicles have far less the appearance of being in proliferation by the means of growth of septa. The intervesicular tissue is scanty in some parts; in others it has more or less numerous connective tissue nuclei, and yet in others it appears to be infiltrated with colloid substance, and to carry small groups of vesicle-cells. In relatively few points, mainly near the bone, the vesicle-cells become more densely grouped, similar to the arrangement in the middle lobe of the thyroid, but nowhere quite devoid of a tendency to form vesicles. Where this seems to be the case it is easy to see that the atypical cells are accumulations of slightly irregular connective tissue nuclei.

In the canals of the skull the vesicle-cells are practically all arranged in small vesicles; there are no distinct plugs, neither of thyroid parenchyma cells nor of fresh connective tissue; and the inside of the skull again shows densely arranged vesicles, but where the dura is reached plugs of thyroid cells, which frequently are quite devoid of any vesicular arrangement. More vesicular forms appear again on the inside of the dura. The masses on the inner side of the skull are far more vascular and in many parts distinctly hæmorrhagic; in other parts there is typical thyroid structure with colloid in the vesicles.

The reaction of the skull is quite interesting. On the outside, which has a true periosteum, the tumor led to the growth of spicules even where there was no obvious evidence for traction; in the thickness of the skull, there is an irregular hyperplasia, and also under the dura which is infiltrated and cut by many septa. There is no evidence of any encroachment beyond the periosteum and the arachnoid lining of the dura.

A section from one of the large tumors of the bronchial glands has the closest resemblance with the middle lobe of the thyroid; small vesicles, mostly without colloid, and in several places imbedded in masses of atypically arranged cells of the same type as the vesicle cells themselves.

The tumor of the femur suggests at first sight the most atypical character. It shows, however, a distinct tendency of the cells toward a vesicu-

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lar grouping and there are numerous, though mostly small, vesicles, without colloid. The tumor also forces itself between muscle bundles, and between bone-fragments. In some parts it is exclusively small-vesicular.

An inguinal gland showed all the types described so far; normal thyroid with colloid areas; small vesicles without colloid passing into atypical aggregations of thyroid cells.

The *summary of this case* is as follows: In a woman with a moderate left-sided struma of the thyroid, there developed a tumor of the skull, a tumor of the femur causing infraction and an invasion of the bronchial and inguinal glands. The tumor of the thyroid also increased during the last year of her life, but it was not *infiltrating* as is characteristic for the struma maligna; it respected the covering membranes of the thyroid; the lymph glands too were not adherent; the tumor of the skull was limited between the endothelium of the dura and the periosteum of the skull, but it pervaded the dura and bone and produced uneven hyperostoses on the inside and long fish-bone like processes from the outside of the skull into the elevated periosteum. The tumor of the femur was distinctly infiltrating as it penetrated through the bone between the muscle-bundles.

In its nature, the thyroid gland itself suggested a condition of adenomatosis in the apparently normal part, and adenocarcinosis in the tumor of the middle and left lobe with its central fibrosis and partial calcification. The tumor of the skull showed to a great extent normal thyroid structure and only within the dura atypical arrangement of the cell elements. The tumor of the femur and the metastasis in the bronchial gland have the type of adenocarcinoma beside normal thyroid structure with typical vesicles and colloid. In short, certain parts of the metastatic tumors, especially that of the skull, showed more typical thyroid structure than even the normal right lobe of the thyroid.

This case may be considered in many respects as an intermediate step between the ones of Cohnhein and Wolf and Eberth and those which Recklinghausen must have had in view in his criticism of Cohnhein's article. Compare also von Eiselsberg, Langenbeck's Arch. Vols. 46 and 48.

It shows clearly the peculiar tendency of this organ to take up its normal appearance in the metastasis according to the opportunities of the soil in a way that Baumgarten has observed for a cystoid of the ovary, and as is sometimes seen in portions of

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metastatic tumors from carcinoma of the intestinal canal. It also shows the different relation of the periosteum of the skull and the dura; the former alone grows spicules within the tumor.

An examination for iodine in the thyroid and the metastatic tumors by Dr. Levene gave negative results, possibly because the tissues had been in various solutions for nearly 7 years. It is however also of interest that the patient did not show more marked symptoms of hyperthyroidism.

Postscript February, 1912.—A number of similar cases have been observed since the presentation of this paper to the American Association of Bacteriologists and Pathologists in 1903. The most interesting case in American neurological literature is the one of Dercum, on Thyroid Metastasis to the Spine; Journal of Nervous and Mental Disease. Vol. 33, pp. 153-168 (with additional literature).

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REPORT OF A CASE OF PELLAGRA IN MAINE WITH REMARKS UPON RECENT WORK ON THE ETIOLOGY OF THE DISEASE.*

By HENRY W. MILLER,

Superintendent, Maine Insane Hospital, Augusta, Maine; Junior Assistant Physician State Hospital, Worcester, 1897-1898.

This case is reported as it is the first case of pellagra originating in so far as we have knowledge in the state of Maine. In fact, not more than two cases have been reported from the New England States, excluding a series of unquestionable cases which have recently been observed at the Rhode Island State Hospital. The interest in this case is further enhanced, owing to the fact that it casts some doubt upon the maize theory of origin.

The essential points in the history are as follows:

Patient a woman, single, 21 years old. Father died at 58 from cancer of the face. Mother living at 56. An uncle and cousin on paternal side were insane. Paternal grandfather died from cancer, age 80. Patient is second youngest child in family of eight children. One brother died at 21 from appendicitis. The other brothers and sisters are in good mental health.

Patient was born on Chebeague Island, Maine (in a rural community). Has lived there all her life, never leaving except for a brief visit to Portland. The patient's father was a fisherman. The family were in comfortable circumstances, living in comparatively good hygienic surroundings. There are said to be running streams in the vicinity. She had measles and whooping cough in early life. Made good progress in her school. Was mentally normal, of a cheerful disposition, but was considered always rather delicate physically.

During the past few years she has worked through the summer as a waitress; in the winters, at home. Menstrual life normal. Her diet was the same as other members of the family. She had meat once a week; fish two or three times a week. The bread was made of ordinary wheat flour. Indian meal was not used as a cereal, was not used in household except in brown bread, which was made on Saturdays. Corn syrup used at times, but for it the patient had no special fondness. In no other way did the products of corn enter into the diet.

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* This paper forms contribution number seven of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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Present Attack.—In September, 1907, patient began to show an inclination to lie in bed and go without her food. She became indifferent, felt weak, run down, and complained of headache. During the winter of 1907-08 she remained by herself a great deal; did not care to get up and dress. Had periods from a few hours to a day when she would not talk. During the summer of 1909 she complained of itching in the extremities, and had what was considered a severe sunburn on the extensor surfaces of her arms. In the summer of 1909 she became better mentally; was able to do some work away from home. In the fall she became more listless and from September, 1909 to July, 1910, she remained in bed. During this time she complained of a burning sensation in the extremities. Four days later she went blue berrying; the sun was hot, she had her sleeves rolled up; that evening her forearms were sore. She thought they were sunburned. The following day white blisters appeared on the back of forearms and between the fingers. At this time she had a very sore mouth, called by her yellow canker (stomatitis). This came on about two weeks after the rash first appeared. She also at this time had a diarrhœa. Since July she complained more of the pain and itching of her legs. In October she went to the ocean, standing in the water in bare feet to obtain relief from the sensation of heat. It was about this time that she consulted Dr. Pudor in Portland, who recognized the condition as pellagra. She was committed to the Maine Insane Hospital, November 8, 1910, on account of marked mental symptoms. She had been sleeping poorly, had hallucinations of hearing, and had begun to go out of doors without her clothing, claiming she had been directed by God to do so.

Physical Examination.—On admission was emaciated; height 5 feet 5 inches; weight 88 pounds. On back of hands and extensor surfaces of forearms was found a peculiar symmetrical discoloration. This area extended on extensor surface from the knuckles to about two inches below the bend of the elbow on each arm. It was of a light brownish tinge, sharply demarcated from the healthy skin. There were no abraded surfaces on the arms. On the dorsal surface of both feet were found several areas, irregularly circular in outline, varying in size from a ten cent piece to a silver dollar, where the superficial skin was eroded, leaving a raw bleeding surface in places where crusts had formed. The skin between the patches was red and edematous. She complained of a burning, scalding, itching pain in her feet. On the right side of the neck about the collar line and below was a patch roughly triangular in shape, and about the size of the palm of the hand, which was discolored similar to the arms. The skin pigment was not increased in the normally pigmented locations except about the anus where it was somewhat darker than usual. Mucous membrane of the mouth, tongue, fauces, and tonsils was abnormally red; papillæ raised. No ulcers in the mouth. Bowels constipated. She had a subjective feeling of dizziness; complained of frontal headache, backache in lumbar region, shooting pains all over her. There was some hyperæsthesia on either side of the vertebral processes in the dorsal region. This area was poorly defined, irregular and inconstant. There was general

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muscular weakness. The blood examination showed 80 per cent hemoglobin; 3,920,000 red blood corpuscles, 6500 whites. The differential count was as follows: Polynuclears, 71 per cent; small lymphocytes, 17 per cent; large lymphocytes 11 per cent; eosinophiles, 1 per cent; few poikilocytes and a few normoblasts.

Cause of the Disease.—The mental condition on admission was a rather interesting one which presented many features similar to the mental disturbances found in infection-exhaustion psychoses. She was indifferently oriented. Her recent memory was defective and she had a few pseudo-reminiscences. She had rather distinct hallucinations of hearing to which she reacted; the voices had an indistinct sound quality and were interpreted by her as coming from the Savior. At times she had vague visual hallucinations, claiming she saw the Savior dressed in white with a purple shawl and she also saw indistinct figures in her room. During this period her temperature was irregularly elevated, presumably due to the suppurative process on her feet. Her mental grasp upon the occurrences in the surroundings was fair. Her school knowledge was defective. Her attention blunted. She showed no stereotypy or mannerisms. Occasionally she felt impelled to carry out the commands of the voices, but she did not have a distinct feeling of influence. She at times was bright and alert and again for days seemed as if in a dream.

The most troublesome feature during the early part of her stay in the hospital was the ulceration of her feet. This condition was aggravated by her persistent tendency to scratch. After various forms of medication she was in December, 1910, placed in hexamethylenamine, 5 grains three times a day. The improvement in the condition of the skin and her general physical condition was quite marked for a time. The pigmentation on the arms and neck faded but still remains visible (fall of 1911), the ulcerations on the feet healed and a characteristic discoloration remains.

In the spring of 1911 there was marked erythema about the knuckles, but the tissue did not break down. During the summer of 1911 she was never exposed to strong sunlight and all corn products were removed from her diet. At no time since her admission has there been any diarrhœa; on the contrary, there is a tendency to constipation. The condition of her tongue and the mucous membrane of the mouth have improved.

Mentally she has deteriorated and presents a profound apathetic dementia. I am not prepared to offer any definite explanation as to the relationship of the mental symptoms to the disease pellagra in this instance. There are many symptoms on the mental side indicative of a dementia præcox process, and in view of the improvement in the physical symptoms with a gradually developing apathetic deterioration, I am inclined to the belief that the basic condition might be a dementia præcox process. Many of the mental symptoms during the acute stage of the disease were undoubtedly due to the toxæmia associated with pellagra.

Attention is at present largely directed to the etiology of the disease, which is still an open question. For a century and a

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half it had been taught by many men of wide experience that the disease bore some relation to spoiled corn, and this belief dominated the etiological field to such an extent that investigation along other suggestive lines has only recently been undertaken.

C. H. Lavinder of the P. H. and M. H. S. in October, 1909, summarized the various theories as to causation as follows: "Broadly speaking, we may divide the theories as to the etiology of pellagra into two large groups, *viz.*, those of the Zeists, who think there is some definite etiologic relation between Indian corn and pellagra, and those of the Antizeists, who oppose this view.

"In the latter group there is really but one body of students, and that is composed largely of the French school, who deny that pellagra is a morbid entity and regard it only as a symptom complex occurring in alcoholics, insane persons, and in persons in other depressed states.

"The Zeists include nearly all students of the disease, but their views are by no means harmonious. Putting it in a general way, their various ideas as to the etiology may be placed in three general divisions:

"(1) That it is an intoxication (toxico-chemical); (2) that it is an autointoxication (toxico-infective); (3) that it is a specific infection either by bacteria, molds or protozoa. All these variations, however, it must be noted, take into more or less essential consideration the relation of the disease to corn; the intoxication, the autointoxication, or the infection being in some more or less definite way regarded as usually connected with or divided from that grain.

"It must be added, however, that while in most of these theories corn is regarded as an essential factor in the etiology of the disease, in others this cereal is not regarded as an absolute necessity, although much importance may be attributed to it. (Ceni.)"

Hirschfelder of Baltimore made a series of skin tests with corn extracts in pellagra to ascertain whether pellagra was due to or accompanied by a condition of hypersensitiveness of the individual to products derived from good and from spoiled corn. These tests were made with substantially the same technic as that employed by V. Pirquet in tuberculosis, except that corn extracts

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were substituted for tuberculin in making the test. The extracts were made from samples of good corn, spoiled corn and spoiled corn containing aspergillus fumigatus. The reactions were all negative. There was a simple traumatic reaction, of the same type as that found with the controls. As a result of his experiments, Hirschfelder thinks it highly improbable that such a condition of hypersensitiveness exists.

Raubitschek at the institute for pathology and bacteriology at Czernowitz made a series of experiments in applying the biologic, anaphylactic, serologic, deviation of complement and other tests. While his results were constantly negative he was led into further research which seemed to him to show that pellagra and beriberi are the results of the action of some toxin in corn and rice which does not display any toxic action unless it is sensitized by the chemical rays of the sunlight. He was led to this conception of the origin of pellagra as the action of an alimentary poison plus sunlight, by the experiences with white animals fed on buckwheat. Kept in the dark they remain healthy, while when they were exposed to the sunlight the hair dropped out and the animals became emaciated and soon died with symptoms of paralysis. This syndrome was not observed with the dark-colored animals or with those kept out of the sunshine. He explains pellagra consequently, as due to a toxin which developed in the parts of the skin exposed to the sunlight, from the action of the chemical rays on the lipoid, alchol-soluble element in corn. The toxin developing in the skin causes the superficial lesions and has also injurious systemic action.

J. D. Long of the P. H. and M. H. Service who has done work on pellagra in South Carolina was struck by the resemblance of the disease to amebiasis and he formulated an ingenious working hypothesis, which has not, however, withstood investigation. He assumed that pellagra is a disease resulting from an injury to the intestinal mucous membrane, produced by the amœba. As a result of the ulceration, there is an inflammatory process extending throughout the alimentary tract which interferes with the absorptive power of the intestine and the manufacture of the digestive ferments normally produced in the intestines. Later, owing to a long continued inflammation of the intestine, the pancreas and the liver undergo inflammatory change which interferes with

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the quality and quantity of the digestive juices that they produce, with the result that the food ingested is improperly digested. The presence in the intestine of undigested food favors fermentation and putrefaction of its elements with the production of certain toxins, ptomains and intermediate products of digestion which are harmful to the body. The insanity of pellagra was assumed to be due to the severe and long continued toxæmia. The lesions on the hands, neck, feet, face and genitalia were assumed to be due to two factors: First, the mechanical pressure on the nerves at their exit from the spinal canal, and second, the degeneration of the nerves themselves as a result of the toxæmia. Long in his investigations found many insane pellagrans with amebiasis, but he also found many sane cases equally infected with amœbas but without symptoms of pellagra.

The association of amœbæ and hookworms with pellagra is common, but the attempt to associate them as cause and effect is as yet premature.

The theory which at present is attracting most attention is that of Dr. Louis W. Sambon, lecturer on tropical medicine at the Liverpool School of Tropical Medicine. Sambon, in 1905, stated that he believed the disease to be caused by a protozoal parasite, probably transmitted by some blood sucking insect. In 1910 he was sent by the British Commission for the study of pellagra to investigate the disease in Italy and he has since announced his conviction that the disease is transmitted to each individual by an infected sandfly, the Simulium reptans, though he has failed to find the actual organism. As proof that pellagra is conveyed by the sandfly, he maintains that the Simulium is found in the swift running streams of all pellagra districts; it has the peculiar seasonal distribution of pellagra. It is found only in rural districts. It is found where pellagra is found, and is the only blood-sucking insect which the British field commission has found in its visits to numerous pellagrous districts in Italy. It has a world-wide distribution and explains the wide distribution of pellagra: it causes epizootics in animals in America and Europe.

Against the maize theory he offers the following five propositions:

1. Pellagra is found in places where maize is neither cultivated or eaten.

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2. It is absent from many places where maize is the staple food of the population.

3. It has in many places either decreased or become more prevalent without any change in the food of the people.

4. Its constant and peculiar distribution does not agree with the very irregular and ever changing distribution of spoiled maize.

5. Since the maize theory was first suggested, no one has been able to prove it.

Dr. Babcock of Columbia, S. C., who has drawn attention to the disease in this country more than any other man, tersely sums up the situation as follows: "I think the deeper one gets into the pellagra problem, the less inclined he is to dogmatize about it.

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ANALYSIS OF PSYCHOSEXUAL ANÆSTHESIA IN A CASE OF PSYCHOPATHIC PERSONALITY.*

By MORRIS J. KARPAS, M. D.,

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(*From the Clinical Department of the Manhattan State Hospital, New York City.*)

The invaluable contributions of Freud have aided us materially in our studies of normal and abnormal mental phenomena. Formerly sexual matters were treated rather crudely, and the psychological aspects of sexuality were totally neglected. We are indebted to Freud for the profound insight which we have gained into psychosexuality. Without any exaggeration one may assert that had it not been for Freud we would not have been able to understand the mechanisms of certain psychotic manifestations in some neuroses and functional psychoses; and, indeed, to him we owe our progress in psychopathology. The case which forms the subject matter of this communication was analyzed according to Freud's methods.

The patient, a young Scandinavian woman,† came to the Manhattan State Hospital, because at home she was very frequently excited and resentful towards her mother, whom she held responsible for her trouble. When admitted the patient appeared quiet, composed and mildly depressed, spoke coherently, and declared that her life had no significance because she had lost her sexual sensations. Formerly objects, scenery, music, etc., would excite her sexually, but at present there was not strong enough stimulus to awaken her.

The history of the case is as follows:

Family History.—Paternal grandfather was strong sexually. The father was a sexual pervert, otherwise there is no vesanic or neurotic taint in the family.

Personal History.—The patient was born in Scandinavia about 29 years ago. As far as known her early life was uneventful. She attended school

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* Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

† In view of the marked sexual history the identity of the patient was somewhat distorted.

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and was a fairly intelligent student. At 15 she began to work, at first in a sweatshop, and later obtained a position as bookkeeper.

She was considered bright and intelligent, fairly active in social circles, and there were no traits of intellectual inferiority.

In 1905 she was operated upon for appendicitis, but without any complications, except for the pain she experienced in the right side. Since then she had suffered from aching pains all over the abdomen. She consulted physicians, and was finally subjected to an operation for a floating kidney in March, 1910.

Since the last operation the patient grew more nervous, cried quite often, blamed her mother for the operation, and on account of frequent spells of excitement it was necessary to commit her to a state hospital.

Upon admission, physical examination showed no evidences of a neurological disorder, and there were no hysterical stigmata.

She remained in the hospital more than 18 months, and her mental condition, may be described as follows:

The patient was quiet, worked on the ward, associated with her fellow patients, took part in all amusements, and was always ever ready to talk about herself. She was very well oriented; her memory was good; and her general grasp was intact. She did not react to hallucinations, and delusional trends could not be ascertained. She spoke freely of her ailment; and she stated again and again that her life was played out because she was devoid of all sexual feelings. "Doctor, I am gone," she pleaded, "life is meaningless, nothing affects me, I am dead to the world, my organs are dead, I have no pain, no feeling, the world has lost all its charms for me, I can never marry, I can never have children, my sexual feelings are dead and they will never be revived." She derived considerable pleasure from talking about her past experiences. However, she was somewhat sensitive; she always tried to emphasize that her reputation was beyond reproach. Not infrequently she cried while discussing her troubles, and, indeed, on several occasions she was disturbed and mildly excited, which she explained on the ground that the loss of her sexual sensations caused her considerable grief and sorrow. The excitement was only transitory, and could always easily be controlled without medication or restraint.

She described herself as having been fairly active, intelligent and taking interest in worldly affairs. She had occupied a fairly good standing in her social circles, and had had many friends and admirers. She was fond of the theater, concert and opera. She read books, and had a fairly good knowledge of the English, French, and Russian literature; the trend of her reading was rather sensational and sentimental.

In regard to the development of her sickness, she volunteered the following account:

Ever since her early childhood she had experienced certain thrills, which she termed electrical shocks, and which were sexual in character and quite often accompanied by orgasms. At the age of 21, about two years after her father's separation from her mother, she began to have pains in the left arm, and later in the left side and thigh, which were also sexual in nature. In 1905

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she was operated upon for appendicitis, but, nevertheless, the pains persisted. In 1906 she gave up her work and went to Scandinavia, where she remained six months. While there she did not improve. She returned home, and still experienced her former pains. In March, 1910, she was subjected to an operation for a floating kidney; from that time the pains gradually diminished in intensity, and in June, 1910, they suddenly ceased, and with them she lost completely her sexual sensations. It is important to note that a few days prior to this episode she quarrelled with her mother, and reproached her for the separation from her husband. She stated that on the night when she lost her sexual sensations she became very much excited, destroyed her bedding, shouted and screamed, and said *that had her father been with her this great misfortune would not have befallen her.* She cried bitterly and condemned again and again her mother's attitude towards her father. From that time on she was subject to similar attacks of mental upsets.

In order to be able to understand the mechanism of this neurosis, let us take a glance at her psychosexual life.

The Patient's Psychosexual Life.—The patient was always very passionate; mere contact with men and women, scenery, objects, words, etc., would excite her sexually to the extent of causing orgasms. Certain words, objects, expressions, signified sexual symbols. For instance, whip, pencil, pen, chimney and snake, meant penis; curtains, pocket books, and lips, vagina; red flag, blood, river and water, menses; pushing, night, sliding, hooks and eyes, satisfy and swim, meant intercourse; and cut, torn, implied first attempt at intercourse. There were certain expressions which would produce a sexual effect upon her; for example, "It is up to you"; "Now so much for that"; "Let it go at that"; "A fine exhibition." This is only a meager illustration of the numerous sexual symbols which unconsciously dominated her life.

From her childhood she had had many wishes; for instance, a great desire to be a mother, because she wished to be suckled. She was fond of fellatio, but without swallowing the semen, and would at the same time allow the man to perform cunnilingus upon her. She liked to fondle a penis, and to squeeze a woman's breast. She would have gratified these wishes had it not been for the fact that she wished to maintain the integrity of her reputation; conventionality helped her to repress her innermost wishes. She had always been considered highly moral in her social circles.

Sexual Experiences.—The patient's sexual experiences had begun as far back as the age of four, when she picked up her dress while her grandfather was fast asleep and snoring, and exclaimed, "Here is a snuff box; snuff it." At the age of five a boy made quite an impression upon her, and she was particularly fond of making coquettish movements in his presence. At the same age she slept with her aunt, who would masturbate herself with the patient's hand. She (the patient) enjoyed it immensely. This practice continued for many years. At the age of nine sexual sensations became intensified when she was told by a girl two years her senior of

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the sexual experiences she had had with men. This same girl would lie upon her and rub against her genitalia. In early childhood she used to play with little girls, and they would suck each other's clitoris.

Masturbation.—Since the age of nine she used to put her hand between her legs, and from this practice she would receive sexual gratification. At the age of 25 she began to masturbate by rubbing her clitoris; formerly, she was afraid of doing this lest she rupture her hymen. She would masturbate regularly once a night. At balls she would resort to onanism between the dances. In 1908, while working for a married man, she used to masturbate five times a day. At the age of 13 she observed sexual intercourse between her father and mother, and at that time she wished she was in her mother's position.

Relations With Women.—Fair complexioned women (her mother was fair complexioned) with developed bosoms, soft expression, and with musical and artistic ability, would usually appeal to her. Especially was she attracted by a woman who had a narrow mouth (narrow mouth she associated with vagina), which would affect her sexually. At 21 she was in love with a certain girl, Jennie. "I used to hug and kiss her. I would say, 'Oh, dear Jennie, let me lie next to you.' I had a great love for her. I used to ask mother to make all kinds of dishes for her. I wished to be more intimate with her, but I was afraid. I wished to suck her breast. I always wished to act in the capacity of a man. I always behaved like a gentleman in the presence of women. I would even walk on the outside, and girls used to make fun of me. When I would read letters from girls I would get sexually excited, so excited that I would have to drink water in order to soothe my passions." Her girl friends were always afraid of her, and quite often they would assert that an examination of her genitalia would be necessary in order to ascertain the identity of her sex. She had actual homosexual practices between the ages of 10 and 12 with a little girl, but not in adult life. When 21 years of age, while sleeping with her mother, she put her hands between her mother's legs and felt her vagina. Her mother turned and she (the patient) immediately took her hands away. Since then she has made no other attempt. It is worthy of note that she was very fond of her mother's body, and would take a great delight in kissing and hugging her neck and back. Pregnant women would exert a great impression upon her, and she liked to caress them.

Father.—In order to understand the type of men that appealed to the patient it is necessary to discuss her relations with her father.

"My father is tall and broad; he is fair complexioned; has brown hair, a little bit gray; the color of his eyes is blue, and they are dreamy; he has a prominent nose, and a medium mouth. He is rather passionate looking; he is neat and intelligent in appearance. He is well informed and is radical in his opinions; he has speaking ability; is generous, but somewhat selfish."

Until the age of five she had slept with her father. Even at that age she was anxious to know how her father's penis looked. When she was seven years

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of age she rubbed his penis in her hands, which she soon found wet. She was frightened and turned her head away. She thought that she had done something very wrong; and she imagined that he was sick and bleeding. At that time she got a good picture of the male organ. Nevertheless, her curiosity was not gratified.

She was her father's first child, and he used to caress her. Indeed she was petted since the age of three or four; and she, in return, showed great attachment for her parent. She had two sentiments for her father, love and hate. She hated him for one thing only, because he associated with other women besides her mother; but she loved him because he fulfilled her ideals. At the age of 17 she thought that he could possess her and wished to marry him. She vividly recalls telling him, "Papa," (embracing him) "would we not make a nice couple?" He reproached her for this remark. She would always hug and kiss him, and clasp him to her breast; and he, as a rule, would reciprocate. The father immigrated to the United States when she was five years of age. When he left her she cried bitterly. Every letter that her mother would receive she would cover with tears. Ever since childhood she thought that should she love her husband as well as her father she would consider herself happy. She respected him like a father, but loved him like a husband. Whenever her father would come in contact with her mother the patient would be envious of the latter.

In her own words, "Sometimes, when the children were off my father's lap, I took their place, and father would often say, 'Such a big girl, shame! the children tire me; no less you; get off.' At which remark I wept, kissed and hugged him, saying, 'Papa, I am a child, too, a big child, but a child; please let me sit, if only a little while.'"

After her mother went to Scandinavia on a visit, she tried to represent her mother, and as she puts it, "I took possession of the affections of my mother and the two younger pets. Noticing that I had a sexual effect on my father he started to wean me off, saying, 'Sophie, you are no more a little girl; it is not becoming; you must learn to become distant; especially, in the future, be distant with young men. I am papa, but strangers expose you for the least intimacy,' etc. I replied, 'Papa, don't insult me; is it wrong to love your own dear papa?' Then approaching and placing my arm around his neck, I would sing:

WHY ARE YOU SAD, PAPA, MY DARLING?

Why are you sad, papa, my darling?
Why are those tears falling to-day?
Why do you look at me so strangely?
Have I done wrong? Tell me I pray!
"No, no, my child, you are an angel,—
There's not a heart purer than thine;
But I've a fear some day you'll leave me
Just as your mother did, there'll come a time."

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"There'll come a time some day
(I'll be far)
When I'll have passed away,—
There'll be no father to guide you
From day to day;
Think well of all I've said,
Honor the man you wed,
Only remember my story,—
There'll come a time."

From childhood her liking for her mother was double, as a child and admirer, and as a companion. Her mother would usually consult her when she was in difficulties. In later life (during her father's separation—he left the family when she was nineteen), when she was of financial assistance to her mother, she would take the place of a husband and father. She would speak of her sisters and brothers as children. Once her mother reproached her for calling them children. When she was sick her mother would carry her, and she would say, "Mother, you carry a sick husband."

"I have always," the patient declared, "identified myself with my father and tried to imitate him in many ways." She maintained sexual fancies about her father, and her innermost wish, since early age, was to consort with him. In 1906, at the age of 23, while in Scandinavia, he rubbed his penis against her vagina, and also performed cunnilingus upon her. She had many such experiences with him.

Relations With Men.—This gives us an idea of her attachment to her father, and we are now in a position to understand the type of man that would attract her.

When she was asked the type of man she loved, she said, "Oh, my papa, he was the man I loved." It is to be emphasized that an effeminate man was her ideal; many of her fleeting lovers were decidedly womanly in their behavior and appearance. Men with fluency of speech (this was a characteristic of her father); rather coquettish; with a great deal of hair (her father had a great deal of hair); narrow mouthed (narrow mouth reminded her of a vagina); and gentle and polite behavior; would, as a rule, make a great impression upon her. Although she had many admirers, and even kept company with some, yet she had not been in love with any of them. Separation from her fiancé would bring about no effective disappointment. At 17 she made the acquaintance of a certain young student. She would call on him. He would hug and kiss her and bite her lip. She stated that he was one of the few men whom she fancied. She could have done anything he would have asked, even consorted with him. She kept up the relation with him for many years. He was ugly, but clean; he had a narrow mouth; and when she spoke of him, she stated, "Oh, his mouth, how clean he was; I could have done anything for him."

At the age of 23 she kept company with a young man with whom she mutally masturbated for more than eight months. Once he rubbed his penis between the labia majora; but she did not permit coitus, because she

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wished to uphold her reputation. She began to dislike him because she learned that he was not strong sexually. Soon they separated, but without bad effects.

During the months of November and December, 1908 (at the age of 25) she worked for a married man, with whom she became infatuated. He was a womanly man; he used perfume and acted towards her like a well-mannered lady. She would tremble in his presence because in many ways he reminded her of her father, especially in his manner. Whenever she would look at him she would get excited and a thick mucous would escape from her mouth; and this secretion she would mistake for uterine discharge. She would kiss and hug his clothes (fetichism), following which she would masturbate. His influence over her was so great that he could have taken advantage of her if he had so desired.

Dreams and Association.—The patient has had many dreams in which homo-sexual and bi-sexual wishes were quite apparent. Brief reference to some of her dreams may be given:

I. "*I dreamed that a lady had several rings on her fingers, with locks attached, one of which she gave me.*"

The lady in the dream was one of her old acquaintances. She had a great ability of speaking fluently (the patient always admired people who could talk fluently—her father was always a fluent talker). Physically, however, she never cared for her. When she thought of her she thought of her parents, with whom she was acquainted while her (the patient's) mother was away in Europe. This woman was her confidential friend; she would sleep with her and would rub against the patient. The rings she wore in the dream were with locks and keys. The latter were attached to a chain. In the dream she gave the rings, saying, "Here, Sophie, have one." Not infrequently this lady would present her with things and would use the same expression, saying, "Here, Sophie, have one." She gave the following associations for ring: "It adds beauty; binds people; and vagina." Lock she associated with intercourse. Keys she associated with male organs, tongue and mouth. Three meant to her father, mother and child, meaning a newly married couple (at another time she associated three with the male genitalia—the two testicles and penis).

This dream expressed a homosexual fancy.

II. "*I dreamt that I was in Scandinavia and walked with a young man through the streets of a village. The streets were unpaved. It appeared as though there had been a shower during the night, as it was awfully muddy and there were puddles. Peasants were clearing the paths. As we were waiting for the paths to be cleared, he raised a little round, white, wooden basket, about four inches in diameter, and said, 'Here, sip.' The contents were minute seeds and white syrup. When these seeds are pressed they produce milky syrup.*"

The young man was tall and dark; he reminded her of a candidate for mayor; he had speaking ability, and was a public speaker. The village was the one where she visited her father, with whom she had sexual practices. The basket she associated with vagina; the seeds with chicken

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ovaries; and the fluid from these seeds meant to her milk from the breast and semen. "Here, sip," meant to her intercourse.

This dream expresses the wish for cunnilingus with her father, which she had cherished all her life. In her early childhood she used to play with small children, and they would suck each other's clitoris.

It is important to note that in both these dreams the mouth has played an important part. The man or woman who figured in her dreams was always one who could talk fluently. Her father was a fluent speaker, and one must bear in mind that the mouth was one of her active erogenic zones—*"von unten nach oben."*

The association test according to Jung was employed, and it would be interesting to refer to a few of her associations, which would also show the trend of her conscious and unconscious thought processes.

Stimulus-word.	Answer.	Time. *Seconds.*	Reproduction.
Head	Brain	2	Hair
Long	Walk	5	Distance
To carry	Basket	4.1	Flowers
To dance	Girls	2	Ball
Stick	Child	2	Dog
Hunger	Poverty	3.2	Food
False	Teeth	2	Teeth
Box	Sexual organs	3	Female organs

Head.—Associated with male genitalia and female genitalia, especially because the penis has a head.

Long.—She was always curious to know the actual length of a penis. At one time she thought that the length of the penis never changes, but when she found that during erection its size increases and depends a great deal upon the strength of the individual, this matter began to trouble her.

To Carry.—She associated carrying with pregnancy; had a great desire to be pregnant; and was, as a rule, fond of fondling pregnant women. She felt that pregnancy was the most pleasant thing in a woman's life, and lamented that she could never conceive, because she was devoid of sexual sensations.

To Dance.—Dancing always meant to her sexual sensations. "When I used to dance I would often get out of step for the purpose of having the partner bump against my knees; this would produce a shock and I would enjoy it. When I would dance with girls I would squeeze them to my bosom.

Stick.—This she associated with "hoople and stick;" as a child she used to be fond of playing "hoople and stick"; hoople and stick she associated with intercourse—hoople, vagina, and stick, penis.

Hunger.—Craving for sexual hunger; hunger meant sexual satisfaction.

False.—Teeth and false she associated with vagina; mouth always meant vagina; tongue implied clitoris; both lips signified vagina; white teeth and narrow mouth would exert a great sexual influence upon her.

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Epicrise.—We have attempted to lay bare the patient's psychosexual life, outline many of her experiences, and show the trend of her wishes. It appears that her psychosexuality is *polymorphous perverse,* which is characteristic of the infantile, but with strong homosexual proclivity. It is worthy of emphasis that her male sexual object usually presents many of the womanly characteristics, plus some of her father's personality. The masochistic and sadistic components are fairly well dominant; the former is manifest in her association with the opposite sex, and the latter, with the same sex. The erogenic zone is not restricted to the sexual organs, but is extended to the mouth as well, "von unten nach oben," and the latter is rather very active, as the dreams and her phantasies have showed. There is not only a strongly libidinous attachment to the father, but also marked identification with him. The latter is the most potent factor in neuroses and functional psychoses. Herein lies the danger of unhealthy sublimation and abnormal compensation. There is another striking feature in the case: the latency period of her psychosexual life apparently had never existed.

On the ground of the anomalous psychosexual life which dominated the patient's mental life and caused deviation from the norm, the personality is regarded as psychopathic. While the patient may show few stigmata of deterioration, in the way of lack of proper voluntary control, and deficiency of ethical integrity, yet there are no symptoms to justify one in regarding it as a schizophrenic reaction.

Before undertaking to interpret the psychoneurotic symptoms in this case it is important to recall the following facts: Beyond a shadow of doubt the *father-complex* was one of the most potent dynamic forces in her mental life. The abnormal tendencies of the patient's psychosexuality were determined by the direct and indirect influences of the libidinous attachment to, and the identification with, her father. In this connection it would be well to refer to Freud, who states:

"Although psychoanalysis has not yet given us a full explanation for the origin of inversion, it has revealed the psychic mechanism of its genesis and has essentially enriched the problem in question. In all the cases examined we have ascertained that the later inverts go through in their childhood a phase of very intense

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but short-lived fixation on the woman (usually on the mother) and after overcoming it they identify themselves with the woman and take themselves as the sexual object; that is, following narcissism, they look for young men resembling themselves in person, who shall love them as their mother has loved them. We have, moreover, frequently found that alleged inverts are by no means indifferent to the charms of women, but the excitation evoked by the woman is always transferred to a male object. Thus they repeat through life the mechanism which gave origin to their inversion. Their obsessive striving for the man proves to be determined by their restless flight from the woman. It must be remembered, however, that until now only one type of inversion has been subjected to psychoanalysis, viz., that of persons with a general stunted sexual activity, the remnant of which manifested itself as inversion. The problem of inversion is very complex and embraces many diverse types of sexual activity and development. Notionally, it should be strictly distinguished whether the inversion reverses the sex character of the object or of the subject." (Dr. A. A. Brill's translation.)

The mechanism of the patient's homosexuality is the same as in Freud's cases. At first she fixed her libido on her father; then identified herself with men; and later took herself as a sexual object. A striking fact stands out prominently in the analysis; that is, the patient's inability to fall in love. Although some of her objects had partially fulfilled her ideals, yet none of them could have substituted her father. In other words, she was consciously and unconsciously in love with her father. It must be emphasized that she was decidedly masochistic since her early childhood; as far as she can remember herself she experienced thrills which produced a pleasurable affect. As a rule, in the presence of men she was subdued and enjoyed pain, provided it was inflicted by the opposite sex. On the other hand, she manifested sadistic tendencies with her own sex. The extreme pains which she began to experience shortly after her father's separation from the family were most probably conversion of the libido into the somatic or the escape of the libidinous energy through another channel which was as well developed as the others. After her father had left her she tried to adjust her libido, but failed. It should be borne in mind that before the development of her

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disorder she quarrelled with her mother and upbraided her for her attitude towards her husband. Because she failed to realize her innermost wish—to regain her father—she was forced to seek refuge in the neurosis. It is evident that the psychosexual anæsthesia is nothing but a *defense mechanism.* She is sexually anæsthetic because her father is denied her. My colleague, Dr. A. A. Brill, tells me that in his cases of psychosexual impotence in men repression of the incest fancy was the underlying psychological mechanism; when the patient comes in contact with the opposite sex the mother image impedes further progress; hence, impotence results.

While the analysis in this case is not complete, yet considerable good has been done to the patient; the periods of excitement have been less frequent, and, indeed, of late she has been fairly calm, and has taken a more cheerful view of life. The question of marriage comes up for consideration in this case, for, after all, one cannot test true frigidity without a sexual object.

The author wishes to express his gratitude to Dr. Wm. Mabon, Superintendent of the Manhattan State Hospital, New York City, for the permission he has given to publish this case. His thanks are also due to Dr. A. A. Brill for some valuable suggestions which he offered in interpreting some of the analytical material.

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THE JURY LAW FOR COMMITMENT OF THE INSANE IN ILLINOIS (1867-1893), AND MRS. E. P. W. PACKARD, ITS AUTHOR, ALSO LATER DEVELOPMENTS IN LUNACY LEGISLATION IN ILLINOIS.*

By RICHARD DEWEY, Wauwatosa, Wis.

No one can contemplate without wonder the historical fact that in the state of Illinois for a period of over 26 years, the only process whereby a citizen of the state could be committed to the institutions for the insane was by appearing in court and being passed upon by a jury. This rule did not apply to insane criminals; but, with this exception, all sufferers from insanity, whatever the nature of their psychosis; whether they were in a toxic delirium; in the grandiose stage of paresis, or in the stupor of melancholia, were brought to the court room and exhibited to judge and jury and, incidentally, to as many spectators as happened to be in the hall of justice. Women suffering from puerperal insanity or in the throes of hysteria, victims of senile dementia, brain tumor, drug or alcoholic addiction—all shared the same fate. They must be publicly declared "insane" by the verdict of a jury, before they could be received for care or treatment in the state hospital. It is difficult to understand how this "first aid" to injured minds came to be devised until we consider two facts. First, the attitude of the public mind, prevailing half a century ago, towards insanity and towards the institutions for the insane—an attitude of mixed suspicion and superstition, growing largely from ignorance; and, second, a vicious and unconstitutional, yet technically legal form of commitment provided for by the statute of 1851. This vicious commitment clause in the Illinois statute ran as follows:

Section 10. Married women and invalids who, in the judgment of the medical superintendent, are evidently insane or distracted may be received and detained in the hospital on the request of the husband of the woman (or parent or guardian of the infant) *without the evidences of insanity or distraction required in other cases.*

By this enactment, the sole control over personal liberty of married women and minors and the quasi-judicial determination of

*Read at the Sixty-eighth Annual Meeting of the American Medico-Psychological Association, Atlantic City, May 29, 1912.

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the question of their insanity were illegally placed in the power of persons who were not the proper officers of the law, for such purpose, and it is almost needless to add that any married woman who could show that she had been sent to and confined in the asylum for insane against her will under this process whether really insane or not, would have a valid claim to further proceedings to determine the questions of sanity and liberty, and could incidentally, in carrying out such proceedings, create much unpleasantness for the trespassers upon her personal rights; for notwithstanding "Clause No. 10" forcible conveyance to the insane hospital was "kidnaping" and detention there was "false imprisonment," if done without the patient's consent, or without express warrant of a competent court of law. Matters were thus left in unpleasant shape for any husband who combined with a hospital superintendent to exercise the power seemingly conferred by "Clause No. 10," and place a wife in the hospital for insane. Such proved to be the case in the instance with which we are dealing. The patient in question was a woman of ready wit, indomitable energy, persuasive eloquence and fine personal appearance, although she had been on both sides of the "border line" between sanity and insanity, and in such a case it may be said that a "little madness" like a "little learning" was a dangerous thing for those at whom its shafts were aimed—more serious indeed than either stark madness of entire sanity.

The public reaction against this unwarranted exercise of the power of commitment, when a case of the kind finally attracted general attention, went to such extreme length that a new law was eventually placed on the statute book which forbade under penalty of fine and imprisonment that any citizen under any circumstances should enter the hospital of the state without a jury first "sitting" publicly upon his case. This was the celebrated "Jury Commitment Law" of Illinois, and the prime mover in originating it and securing its passage was Mrs. E. P. W. Packard, who had been committed and detained three years in the state hospital under the vicious commitment "Clause No. 10"; and this fact opened to her a brilliant career as a martyr to tyrannical legislation and conferred upon her a great distinction as reformer and "deliverer of the oppressed" throughout the length and breadth of the land—a career in which she manifested a high order of ability to muster

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and organize her forces; also to sway legislative bodies by her eloquence, not only with Illinois as her battle-ground but in Massachusetts, in Maine and in Iowa. She also made bold, though non-successful campaigns in Connecticut, in New York and in Washington, D. C. But it is specially important to understand in this connection that the thing which gave power to Mrs. Packard was not so much her own merit and skill, though she had her share of these, nor the weakness and folly of legislative bodies, though these too are well known, but the fact that there was a strong reaction against a wrong which had been done under a form of law, and the feeling that such error or weakness in the law must be corrected at all hazards, even the hazard of overcorrection and this strong feeling remained for twenty-six years in the minds of legislators, as an insurmountable barrier to better enactments, though proposed again and again.

I desire to present a brief statement of the facts in this case and of the legislative career of Mrs. Packard, and to advert to the present *status* of the law in Illinois.

Dr. W. R. Dunton several years ago presented in the Johns Hopkins Bulletin [1] a thorough and admirable study of Mrs. Packard to which I am much indebted. I have also made use of seven volumes belonging to me of Mrs. Packard's curious writings and of the official documents in the case.

The starting point of our narration is the home of the Rev. Theophilus Packard, a Presbyterian clergyman in charge of a Congregational church in the little village of Manteno, Illinois. His wife, Elizabeth, and he had lived together twenty years and six children had been born to them. He was fourteen years her senior and she was forty-three approaching her chinacteric. Little is known of their previous life except that they came from Massachusetts where her father was also a clergyman. Dr. McFarland in discussion before this Association found in volume twenty of the American Journal of Insanity (p. 88 *et seq.*), states her mother had been insane and she herself at twenty had been in the Worcester

[1] "Mrs. Packard and Her Influence on the Laws for the Commitment of the Insane," by W. R. Dunton, Jr., M. D., Assistant Physician Sheppard and Enoch Pratt Hospital, Towson, Maryland. Johns Hopkins Bulletin, Vol. XVIII, No. 199, October, 1907. Also "Further Notes on Mrs. Packard," Idem. Vol. XIX, No. 208.

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asylum: also that she was well educated and of bright mind and had been a teacher in a young ladies' school. The records of the Worcester hospital show that one Elizabeth P. Ware was committed by the judge of probate February 6, 1836, and discharged recovered March 18 of the same year. The transcript of the history, kindly furnished me by Dr. E. V. Scribner states "she was an interesting and intelligent girl" and certainly in later life as Mrs. Packard she was a woman of bright mind and a ready talker and writer. It, furthermore, appears that the Bible-class of the Manteno church was in a languishing condition in the year 1860 and in order to "get up an interest" the deacon in charge of the class invited the pastor's wife to appear and present her views on Bible topics, which views were known to be original and interesting. The good wife referred this request to her husband and his reply as quoted by her was, "I think you had better go,wife, and see if you can help him. I will take care of the babe during the intermission so you can be free to go." The husband appears thus to have taken an advanced position, worthy almost of the present day, which, however, he failed later consistently to maintain; and the wife, who would have been worthy to serve as a leader in the ranks of the militant and insurgent women of our own time, appeared before the Bible class and delivered most interesting opinions on total depravity, right of private judgment, God's immutability, freedom of conscience and the like, which aroused keenest interest and brought the membership of the Bible class in a short time from seven to forty-six. But the deacon, in throwing open the class to free discussion, soon had a series of such lively and contentious debates and so much heterodox opinion to deal with that all agreement and authority vanished and it appeared the agitation in which Mrs. Packard was the leader, must cease or the church become seriously disrupted. The principal point of difference was Mrs. Packard's denial of Calvanistic doctrine. The deacon now proposed to the pastor that his wife should give up these Bible class discussions, and the pastor made the same proposal to his wife. She, however, insisted that her husband should either defend her in her honest opinions or else announce that he had forbidden her to continue her Bible-class activity and as he would take neither of these courses, she allowed her displeasure to be generally known, and, later, on a Sunday when service was in

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progress and her husband was in the pulpit, entered the church, interrupting the proceedings, demanding to know if the officers of the church were present, and insisting that a letter of dismissal should be immediately forthcoming. Her conduct was eccentric and, whether it was valid evidence of insanity or not, led her husband to the belief that she was insane and should be committed to the asylum; and of course a certain amount of bigotry and intolerance complicated the situation on both sides. Soon after this Mrs. Packard was placed on board a train and taken by her husband to the state hospital at Jacksonville. At the railroad station she refused to go voluntarily, and being advised that force would be used, suggested that a couple of gentlemen among the crowd collected about, should clasp their hands so as to form a "saddle seat" for her, and thus she rode from the platform to the car. The sheriff was present and directed the proceedings, but it afterwards transpired he had no legal warrant and in fact, had been refused a writ in the probate court, but felt satisfied in acting under the "Clause No. 10" above referred to. Arriving at the hospital for the insane, the medical superintendent received and detained Mrs. Packard (as expressly authorized) under the vicious sanction of "Clause No. 10." He was exercising a supposed legal right and the error was in the law not in him.

Mrs. Packard found herself, at first, pleasantly surrounded and interested in her new environment. She appears to have been quite privileged; to have assisted in entertaining other patients, etc. But, after about four months, was placed in a disturbed ward.

In her book published after her release and at the legislative investigation, she made various accusations which time will not permit us to consider here further than to say that evidence conflicts and *animus* is so apparent as to render candid judgment difficult. It seems probable, however, that Mrs. Packard though probably sincere was carried away by her zeal for reform and instead of weighing evidence impartially made herself believe what accorded most with her purpose of bringing about "reforms."

At the end of the third year of her confinement at the state hospital, Mrs. Packard was ordered removed by the trustees of the hospital and taken to her home by her husband where, being again confined against her will, she smuggled from the window

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to a passerby a note addressed to a neighbor, who, consulting the county judge, was advised that if she was restrained of her liberty, a writ of *habeas corpus* would lie and such a writ was accordingly sued out.

When the hearing took place before the county court in Kankakee, very general attention was aroused. Public sentiment strongly favored Mrs. Packard, and it naturally followed that the hearing before a jury resulted in a verdict of sanity.

The time and space forbid discussion here of the question of her sanity; it would easily make an article of itself; but I will have a few words to say on this point before closing. She manifested a skill and shrewdness in apprehending legal points and in power of winning people to her views that were quite remarkable, even allowing for the advantage her sensational asylum career secured for her. And whether her cause was bad or good she exhibited heroism in its prosecution. She now started upon a general career of agitation in various states of the Union for reform in the commitment laws; in the laws regulating the administration of the asylums, and also those affecting the legal *status* of women in general. She acquired the "sinews of war" for her campaigns by canvassing for the sale of the book she intended to publish. She gave to everyone she met, who would accept them, written promises to furnish her book when published in exchange for small sums of money. Making a beginning in this way she met with much success and later was enabled to publish and sell enough books to support herself; indeed, eventually clearing many thousands of dollars. She in the end acquired property, bought a good home in Chicago and compelled her husband in Massachusetts to surrender their minor children to her custody, taking their care and education upon herself.

After her release from the insane hospital, in 1865, she first went to Massachusetts and in March of that year, being given a hearing before a committee of the legislature, presented two bills. No. 1 was worded as follows: "No person shall be regarded or treated as an insane person or a monomaniac simply for the *expression of opinions,* no matter how absurd these opinions may appear." This law she alleges was needed for the personal safety of reformers. No. 2 was worded as follows: "No person shall be imprisoned and treated as an insane person except for *irregularities of con-*

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duct such as indicate that the individual is so lost to reason as to render him an unaccountable moral agent." These bills or sections of bills were enacted by the legislature and are found on p. 268, Sec. 2, of the General Laws of Massachusetts, according to Mrs. Packard's statement in her book.[7]

In the winter of 1866 Mrs. Packard returned to Illinois and inaugurated her struggle to secure a jury trial for all persons committed to the state hospital for insane. What she called her "personal liberty" bill was introduced in the legislature. This bill required in all cases a verdict of a jury and an order of court in the case of commitment of any person to any hospital or asylum for insane. The bill also provided penalties of fine and imprisonment for violation, and as Mrs. Packard alleged that scores of sane persons were imprisoned at Jacksonville, ordered and required that all persons *now* detained in the state hospital for the insane should be entitled within sixty days to be taken to court and given a public hearing before a jury. A law had previously been passed in 1865, doubtless to remedy the mischievous provisions of "Clause No. 10," requiring a jury trial. But a general agitation of the question of commitment was now brought about and Mrs. Packard's allegations, that large numbers of sane people were held in the state hospital, met with such credence that the additional provisions for a hearing in the case of all persons now in custody and for fine and imprisonment were attached to the bill. In this connection it may be noted that the formal judicial inquest as to insanity of the total population of the hospital at Jacksonville which later took place, did not result in the expected discovery of any sane persons held as insane.[8]

The so-called "personal liberty" bill was finally approved by Governor Oglesby on March 5, 1867. In this same year a committee was appointed to investigate the institution at Jacksonville, and during a period of several months conducted an investigation of an unusual sort which, however, was manifestly an *ex parte* procedure—the committee refusing to allow the superintendent or trustees to be present at the hearings which were held in various parts of the state but not at the hospital itself. The committee also advertised in the public press for complaints against the manage-

[7] Modern Persecution, Vol. II, p. 100.
[8] Trustees Biennial Report, Dec., 1868, pp. 8 and 9.

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ment, and a vast number were collected, which Mrs. Packard "edited" with great ingenuity. The committee adopted its course with such evident bias against the management and against Dr. McFarland personally, that there was much protest against their methods, and the recommendation they made for Dr. McFarland to be discharged was opposed by many disinterested persons. The old board of trustees were now reappointed by the governor and after reappointing Dr. McFarland, themselves resigned. There was then no power to displace the superintendent until another session of the legislature could convene.

After Mrs. Packard had been instrumental in carrying legislation in Massachusetts and Illinois she endeavored to secure the passage in Connecticut of a law equalizing the property rights of husband and wife. She was incited to this by the fact that her husband had kept property of hers in his possession and could legally appropriate her earnings even now. She was, however, unsuccessful in her efforts in Connecticut, although given a joint public hearing by House and Senate, yet in the midst of what seemed a most successful campaign, support was suddenly withdrawn. She alleges that the publication of her alleged "love letter" to Dr. McFarland in the press of New Haven together with other, as she claims, untrue and scandalous matter, turned the tide against her. The particulars of this are not accessible.

Mrs. Packard then turned her attention, for the time being, to Iowa, and in 1872, after numerous hearings before the legislative committee, and a large amount of lobbying, her bill was passed, conferring special privilege of correspondence upon inmates of asylums and requiring that all letters written by patients to certain designated outside correspondents or to members of the boards of charity should be forwarded unopened, also establishing a visiting committee with a woman member upon the board. The bill also provided that at least once each week patients should have writing materials and other facilities for correspondence, which should be forwarded unopened by the superintendent. Letters addressed to the patients also were forbidden under heavy penalties to be opened by any person but those to whom they were addressed. This law was passed with an emergency clause as being of immediate importance.

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Mrs. Packard later, in 1874, visited the state of Maine and was instrumental in having a law passed there which provided for a visiting committee with a woman upon the board. When shown through the state asylum at Augusta, after conversing with the patients upon the wards, she stated to the chairman of the visiting committee that there were at least fifty patients who ought not to be in the institution though nothing is given to substantiate this charge. She presents a commendatory letter, however, from Governor Dingley with reference to the working of the law. In 1875 she visited Washington and was given a hearing before congressional committees of House and Senate with reference to a bill for the national protection of the "postal rights" of the inmates of insane hospitals. She was at first "turned down" by Postmaster General Jewell, and was disappointed in gaining an interview with President Grant, but she was given access to Mrs. Grant, who bought two of her books and made an appointment for her with the president, and General Grant later received her and expressed his approval of her bill which was eventually reported favorably by committees of both House and Senate, but never taken up for passage. The bill provided among other things that a government letter box should be placed upon the premises of all asylums for the insane, public and private, whenever requested by the authorities of the several states and should be accessible to all the inmates personally.

I will now give a few words to Mrs. Packard's mental condition. She appears to have been a patient belonging to the paranoiac class, possessing a remarkable fluency and a pleasant personal address, yet the victim of delusions of a religious form. The mental disorder from which she suffered related almost solely to ideas of a mystical character. Her views upon Calvinism and total depravity, which were the "apple of discord" in the case, had nothing necessarily pathological about them. Taking her own attitude and writings one meets with extraordinarily inconsistent assertions and ideas. In the dedication of her book called "Modern Persecution, or Insane Asylums Unveiled" she calls herself "the mother of her country, and her sons and daughters are—*The American Republic.*"

The testimony of a physician who examined her when first sent to the hospital was that she considered that calling her insane . . .

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"was blasphemy against the Holy Ghost." She quoted this testimony herself in her book and does not take occasion to deny it. Dr. McFarland found she entertained the belief that she was the third person of the Trinity; the first and third persons being divine man and woman; their offspring was the Son of God, and she the mother of this Son. Her counsel took pains to explain that this theory about sex of the persons of the Trinity had been advanced by theologians in olden times and might be held by sane persons; but apparently he overlooked the irrationality of her application of this idea to herself personally. She saw, as she states, nothing insane in the claim of another patient who claimed to be Jesus Christ.[4]. Mrs. Packard also maintained "with the utmost gravity and earnestness," so the Rev. Dr. Sturtevant, president of the Illinois College, states, that her husband was literally "the great red dragon of revelation."[5]

Whatever Mrs. Packard's mental state, and of this it is difficult to judge absolutely, one is compelled to regard her as either insane or lax in morality, in writing her celebrated "love letter" to Dr. McFarland. This letter which she wrote to the doctor after she had been two and one-half years in the hospital reads as follows: * * *

My heart has never been wedded. It is whole and sound and unappreciated except as you, the first true man I have ever met, accept it. I know this is a bold step for me to take, but you know I am *dauntless* in the *right*. I have a right to love a true man, and if he is the true man I take him to be, it won't offend him or expose my honor or virtue to let him know it too. I wish no one except yourself * * * to know of this act. My own heart does not condemn me for this act, neither does God condemn me for loving his image.

Yours in the best of bonds,

Elizabeth.

When this letter was introduced in evidence at the legislative investigation, Mrs. Packard freely admitted writing it. She also admitted that she at the time knew Dr. McFarland to be a married man and that she herself had a living husband. She introduced a

[4] Modern Persecution, Vol. I, p. 347.

[5] Special Report of the Trustees of the Illinois State Hospital for the Insane, 1868, p. 39.

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written explanation of the letter the purport of which was as follows:

> First, I love God. * * * Second, I love myself. * * * Third, man is made in God's image. * * * Fourth, my spirit in its present embodied form needs and calls for a protector, etc.

She herself wrote this letter also (as her book shows), while she entertained what seems like a delusive belief that Dr. McFarland had been guilty of the grossest immorality. In her "Mystical Key"* referring to a time when she had been four months in the hospital; she remarks:

> There were confined in this, one of the worst wards in the house, some very attractive ladies who seemed to be perfectly sane, and insisted they were put there for the doctor's especial accommodation. These facts were communicated to me in confidential tones while under their windows on the outside.

In view of these facts one is compelled to regard Mrs. Packard as either insane or lax in morality and as other evidence of moral laxity or lax conduct on her part is lacking, disorder of mind seems the more probable explanation. All things considered, the question of her insanity seems to require further elucidation.

The undesirable and injurious results of the Jury Commitment Law may now be briefly considered together with the advantage gained by the statute replacing this law which has been in operation since 1893. The former law failed to recognize the distinction between a trial and an inquest. The adjudication of insanity followed the line of criminal procedure. The unfortunate patient was "accused" of insanity and if "convicted," taken into custody by the sheriff exactly as in criminal procedure.

The entire annals of the insane in the state of Illinois furnish no greater evidence of cruelty to the insane and their friends than this so-called "reform" so zealously promoted by Mrs. Packard. As a matter of fact, more sane persons were found insane by jury trials; as shown by the reports of the institutions from year to year, than were ever wrongfully committed under the earlier system. The effect upon the patient was frequently detrimental; the impression gained by the proceedings arousing in his mind the idea that the court proceedings were for the purpose of substantiating

* Page 60.

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some charge against him, and when found insane he believed himself innocently condemned.

Another, and a most serious injury entailed by this law, was the procrastination of all suitable care and treatment. The conveying of a patient to court and affixing upon him what was considered as "the brand" of a public record of insanity was such a repugnant procedure that serious harm was done to the patient by the delay in seeking the care of the hospital. Rather than go through this ordeal the friends would leave the patient without care or suitable treatment for months and even years; his insanity in the meantime becoming chronic and incurable. Dr. Hack Tuke of London in his work on "The Insane in the United States,"[1] writes as follows:

> The publicity is a serious objection, and I was informed that people often kept their friends at home rather than make their insanity known. He also quotes my own remarks, that "The best feelings of all right minded persons are outraged by seeing presented in court the depraved and unnatural acts and speech of otherwise reputable men and women."

Dr. Archibald Church, at an indignation meeting held for discussion of this law, February 16, 1891,[2] stated he had seen

> "a man suffering from acute mania shackled hand and foot, and then placed in a canvas sack and carried 30 miles to the county seat, and subsequently on the same day brought 50 miles to the asylum." He had seen "a woman of medium stature tied with 40 feet of rope, held by four men and carried in an open wagon 20 miles to be tried."

It is impossible in the space at my command to discuss the law at present in force, which was passed in 1893, further than to say this law provided for appointment by the court of two medical commissioners to examine into the mental condition of the patient and report their findings. These were reviewed by the court and warrants issued for commitment or not, according to the discretion of the judge. The law left the jury trial available to any patient who should request it. It also provided for voluntary commitment previously unknown in Illinois. It was provided that inquests in lunacy should be in open court or in chambers at the discretion of the court. Court was also authorized to re-

[1] "The Insane in the United States and Canada," by D. Hack Tuke, M. D., LL. D., London, 1885, p. 69.

[2] Chicago Medical Record, March, 1891.

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quire all persons not directly interested to withdraw from the court room during the inquest. The law also provided for freedom in correspondence and communication with friends on the part of patients; also required that a record should be kept of all restraint or seclusion practiced in the institutions, and that these should only be employed upon the order of the physician in charge. Provision was also made that "any person who may be in the early stages of insanity who may desire the benefit of treatment in a state hospital for the insane as a voluntary patient, may be admitted to such hospital on his own written application, accompanied by a certificate from the county court stating" etc., "*Provided*, That all voluntary patients shall have the right to leave the hospital at any time on giving three days notice to the superintendent."

With reference to the working of this law I will briefly state the experience obtained in the 19 years during which it has been in operation.

The process of adopting the new procedure was somewhat slow, as is always the case with the establishing of new legal precedents. In Cook County, with the city of Chicago within in its borders, no change of procedure was brought about for several years. The vast majority of the cases from this county were and are still accumulated from week to week in the detention hospital and disposed of by jury trials on a certain day of the week—the number ranging from a minimum of 10 or 12 to 30 or 40 in each successive week. In Cook County the cases are quite exceptional where a commission is appointed, chiefly in view of the fact that in certain cases where a commission was appointed, troublesome litigation ensued; rather from local causes than from any defect in the law. Even Cook County, however, is adopting the commission form of procedure with increasing frequency and no dissatisfaction with the law has ever come from any source to my knowledge.

I present, herewith, a table showing that of the total commitments in the state of Illinois for the year ending September 30, 1911, (2377), 1219 were by warrant issued on medical certicate; in other words, *without* jury trial; and 928 were by verdict. These 928 jury commitments were almost wholly from Cook County. Taking the five institutions which do not receive patients

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from Cook County; out of 1216 commitments there only 215 by jury verdict, of 1362 committed, to these, 1263 were committed by medical certificate. The difference of 99 was made up of voluntary cases, mittimus cases, etc., and in the commitments for the Central Hospital of Illinois for the biennial period ending June 30, 1911, of 660 patients all but 114 were committed by medical certificate. There were also in the year ending September 30, 1911, 177 voluntary commitments. The working of the present law has been without criticism or friction or any complaint of illegal commitment or false imprisonment.

COMMITMENTS IN THE STATE OF ILLINOIS FOR YEAR ENDING SEPTEMBER 30, 1911.

How Committed.	Institutions.							Total.
	Elgin State Hospital.	Kankakee State Hospital.	Jacksonville State Hospital.	Anna State Hospital.	Watertown State Hospital.	Peoria State Hospital.	Chester State Hospital.	
Medical certificate	59	159	304	330	168	199	.....	1219
Prison certificate	.....	.....	.....	.....	.....	.....	17	17
Verdict	339	374	42	34	74	65	.....	928
Mittimus	.....	4	.....	.....	2	.....	14	20
By order of court	.....	.....	7	.....	.....	.....	.....	7
Voluntary	10	35	13	7	61	51	.....	177
Transfer	.....	.....	.....	.....	.....	.....	4	4
Reinstated escapes	.....	.....	.....	5	.....	.....	.....	5
Totals for year	408	572	366	376	305	315	35	2377

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A STUDY OF HEREDITY IN EPILEPSY.

By EVERETT FLOOD, A. M., M. D.,
Superintendent State Hospital, Palmer, Mass.,
AND
MISS MARION COLLINS,
Fieldworker.

It has been generally recognized that epilepsy is, to some extent at least, an inherited disease, and for that reason some record of heredity is filed in the case histories of institution patients. Such information, however, is usually fragmentary and often is entirely lacking. In order to obtain fuller information in regard to the hereditary factors in epilepsy, the Monson State Hospital for the last fifteen months has employed a fieldworker to go to the homes of the patients, and from the parents, relatives, and family physician secure all possible facts that may throw some light on the subject.

Every mating may be regarded as an experiment in breeding of the human race, and rightly to interpret the results of the experiment, the conditions under which it occurs must be carefully observed. Inheritance is from the germ-plasm, the somatic nature of the individual interpreting only in a partial degree his gametic nature. A study of all the offspring of a given mating shows the possibilities of the union of two given strains of germ-plasm. With these results in hand, the next step is a careful study of the parents and their fraternities to learn the nature of their germ-plasm. Light is thrown on this by a study of their fraternities as well as by a study of themselves and their parents. While any factors that may be significant are recorded, epilepsy, insanity, feeble-mindedness, alcoholism, syphilis, tuberculosis, extreme nervousness and sick headaches in the relatives of the patients are made the subject of special inquiry.

The material for this study is from the pedigrees of seventy-eight of the patients at the Monson State Hospital. In connection with these, there are some pedigrees of allied families, making

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ninety pedigrees on file. A few of the pedigrees are somewhat incomplete, but a large number of them have been extended so far that a single one may furnish sufficient data for the study of the family history of from two to five cases of epilepsy.

The pedigrees have been examined with the view of obtaining light upon the relation of alcoholism in the parents to epilepsy in the children. In the correlation table alcoholism is considered present in parents when they are believed to use alcohol in excess. Epilepsy is considered present when there is good indication that it may be in the germ-plasm; that is, if it occurs in the parents, in their fraternities, in first cousins, or in direct line of descent. The vertical lines show the paternal side; the horizontal lines, the maternal side. Thus, the second square in the fourth row from the top reads: "Mother neither epileptic nor alcoholic; father epileptic but not alcoholic." The number in the pedigrees is given to indicate the relative weight of each case.

It will be noted that there are only two cases in which both parents are alcoholic but not epileptic. In the first case, EN II, both parents were very alcoholic. In fifteen years the mother had been in court twenty-five times for drunkenness, serving sentences of from three to nine months. The father was also a confirmed drunkard. Of five children, three died in infancy, one daughter is normal and well spoken of, the other developed epilepsy at seventeen years with no exciting cause. One sister of the father died a drunkard, the other three in his fraternity are undescribed, as are also his parents. The mother's mother died of tuberculosis, the mother's father of Bright's disease. No further record could be obtained. While, therefore, that case is considered as epilepsy absent in both parents, it cannot be positively said that there is no defect in the family. The other case, Kg, is more complete. Both parents are heavy drinkers and the mother is also considered mentally unbalanced. Of their children, one became epileptic at fifteen years, the other drinks heavily. All the fraternity of the mother are normal, and her parents are reported normal. One brother of the father is alcoholic, otherwise that family is apparently normal. Thus in all the descendants of the grandparents on both sides, there is only one case of epilepsy. This case, therefore, suggests that alcoholism in the parents may have been the cause of epilepsy in the child.

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TABLE I.*

CORRELATION OF EPILEPSY AND ALCOHOLISM IN MATINGS WHICH PRODUCE EPILEPTIC OFFSPRING.

Vertical lines show paternal side, horizontal, maternal.

FATHERS.

MOTHERS.	No E. A present.					No A. E present.					E present. A present.					No E. No A.				
	Case	E	A	No. in frat	No. in ped	Case	E	A	No. in frat	No. in ped	Case	E	A	No. in frat	No. in ped	Case	E	A	No. in frat	No. in ped
No E. A present.	En II	1		5	26	Ws II	1		7	57										
	Kg	1	1	2	43															
	Total	2	1	7		Total	1		7											
No A. E present.	Rn II	1		3	195	M 1	1		8	64	We II	1		6	36	As	1		5	77
	My II	2		6	108	Ds	1		1	27	Dy II	2		6	30	Br I	1		1	23
	C B	1		4	86	Gn	1		3	83	Dm	2		6	79	Mi	2		4	64
	Ln	2		20	37	Fw	1		8	31	Dy	5	2	12	86	Hn	3		10	51
	Aw	1		6	71	Kt	3		11	51						Dw II	1	1	3	35
	Mx	1		11	46	E 5	1		11	50						Wt	1		10	54
						E 5	1		7	50						Sl	1		9	305
						Bn II	1		6	25						Pl	1		1	26
						Be	1		10	27						Vt	2		7	28
																R S	1		1	43
																B F	2		3	39
																Br 1	1		2	23
																Br 2	1		3	21
	Total	8		50		Total	11		65		Total	10	2	30		Total	18	1	59	
E present. A present.	Pk	1		9	48						Ma II	2		5	55					
No E. No A.	Ml	3	2	11	46	Gs IV	1		3	37	Sn III	2	2	10	44	De II	1		6	64
	Bh II	1		6	49	As IV	2		6	40	Gu	1		1	69	Cn	3		4	22
	Tr	1		3	30	Wc	2		8	48	Aw	2		6	71	Fe II	2		7	38
	Sg	1	2	6	16	M E	1		6	25	Dn	1		7	39	Bs	3	1	6	69
						Wn	2		8	50	Mh	1		7	27	Pk II	2		3	49
						Ty	1		7	143						Gr	1		4	35
						Dt	1		5	29						Tn	1		9	29
						Wr	1		3	36						Bg	1		10	22
						Hy	1		10	37						Se	1		3	39
						Es	5		13	30						Rh	1		4	67
						Ky	2		7	47						Hd	4		10	48
						Bk	2		4	29						Wb	4		11	73
						Gt	1		4	23						Wb	1		2	73
						Bs	2		6	69						Or	1		7	23
						Gn	1		1	83										
	Total	6	4	26		Total	25		91		Total	7	2	31		Total	26	1	86	

* The tables in this article were compiled from the records of the Monson State Hospital by Miss Marion Collins, Field Worker, with the assistance of the Eugenics Record Office.

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In connection with this the Eugenics Record Office gave the privilege of examining pedigrees of non-epileptic strains for matings of two alcoholic parents. Eight such matings were found as follows:

9-269, III 26-27. Both parents alcoholic, criminality and sexual immorality on both sides of the family. Two children died in infancy; one is criminalistic and immoral; the youngest, thirteen years of age, is very nervous, but not epileptic.

9-269, III 19-29. Both parents alcoholic and sexually immoral. Of nine children, one is epileptic, alcoholic and immoral. One is normal, six are alcoholic, one drinks some but not to excess. The father's parents in this case are not described. The mother's parents were both alcoholic.

9-269, I 6-7. Both parents alcoholic, further ancestry not known. Two daughters and two sons alcoholic and immoral, one a fairly good woman who drinks some.

9-269, III 61-62. Both parents alcoholic, two children alcoholic and immoral, one son drinks some, one boy frail.

9-295, IV 8-9. Both parents alcoholic and sexually immoral. Five children, of whom three died in infancy. The two girls who remain are of doubtful reputation, and not of average mentality.

9-33. Both parents alcoholic and immoral. Eleven children. Three died in infancy, five are immoral, two are feeble-minded, and one is criminalistic.

3-325. Both parents alcoholic. One child criminalistic, one died at four months of spasms, three are still under ten years, one daughter is alcoholic and immoral, one son criminalistic and immoral.

3-350. Both parents alcoholic. Three children criminalistic. Three miscarriages. One child under thirteen years. Father's father insane and mother's brother alcoholic.

This data is too insufficient for drawing any conclusion, or even for basing an opinion. Still, the suggestion is made that before concluding that alcoholism in parents is a cause of epilepsy in the children, a careful study of many family histories should be made. On the other hand, a glance at the table shows rather clearly that alcoholism may be closely associated with epilepsy. A surprising feature of the table is the small proportion of alcoholics recorded in the offspring. This may partly be accounted for by the fact

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TABLE II.

CORRELATION OF EPILEPSY AND FEEBLE-MINDEDNESS IN MATINGS WHICH PRODUCE EPILEPTIC OFFSPRING.

Vertical Lines Show Paternal Side, Horizontal Lines Maternal.

FATHERS.

MOTHERS.	No E. F present.					E present. No F.					E present. F present.					No E. No F.				
	Case	E	F	No. in frat	No. in ped	Case	E	F	No. in frat	No. in ped	Case	E	F	No. in frat	No. in ped	Case	E	F	No. in frat	No. in ped
No E.	Bs I	3	1	6	69	Aw	2	4	6	71	Bs III	2		6	69	De III	1		6	64
	Tr II	1	1	3	30						E3 III	5		13	30	Fe II	1		7	38
F	Rh III	1	1	4	67											Hd II	2		10	48
pres-	Wb	4	5	11	73											Bg	1		10	22
ent.	Wb	1	1	2	73															
	Wt	1		10	54															
	Total	11	9	36		Total	2	4	6		Total	7		19		Total	5		33	
E	MyIII	1		6	108	Dy	1		6	30	Dm II	2		6	79	Rs	1		1	43
pres-	Gn II	1		1	83	Ma	2		5	55						Vt II	2		7	28
ent.	Dn II	1	1	7	39	We	1		6	36						Pl III	1		1	26
						Bn	1		6	25						Bh III	1		6	49
No F.						Be	1		10	27						Sw II	1		9	305
						Fw	1		8	31						C B	1		4	86
						Kt II	3		11	51						Mx	1		11	46
						Mi II	1		8	64						Mi	2		4	64
						Di	5		12	86						Br I	1		2	23
																Mg	1		5	37
																Ln	2		20	37
																Br 2	1		3	33
																Br 1	1		1	21
	Total	3	1	14		Total	16		72		Total	2		6		Total	16		74	
E	Rn II	1		3	195	Ds	1		1	27	Gn III	1		3	83	AwIII	1		6	71
pres-	Hn	3	1	10	51						E 5	1	1	7	50	P K	1		9	48
ent.	E 5	1	5	11	50											As	1		4	77
	DnIII	1	1	3	39															
F																				
pres-																				
ent.	Total	6	7	27		Total	1		1		Total	2	1	10		Total	3		19	
No E.	Sg	1		6	16	As IV	2		6	40	Bk III	2		4	29	Cn III	3		4	22
						Ky	2		7	46						En	1		5	26
No F.						Mh	1		6	27						Ml	2		11	46
						Sw	2		10	44						Pk II	2		3	49
						G S	1		3	37						Gr II	1		4	35
						Gw	1		1	69						Tw	1	1	9	29
						Ws	1		7	57						Or	1		7	23
						Gt	1		4	23						Kg	1		2	43
						Wc	2		8	48						Se	1		3	39
						M E	1		6	25										
						Wn	2		8	50										
						Hy	1		10	37										
						Wr	1		3	36										
						Ot	1		5	29										
						Ty III	1		7	143										
						Kg 2	1		3	33										
	Total	1		6		Total	21		94		Total	2		4		Total	13	1	48	

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that as it is more common in males than in females, the number of females in the fraternities reduces the proportion; further by the fact that the total number in the fraternities includes the unknown and those who died in infancy. Cases under institutional care are unable to obtain alcohol.

The cases in which epilepsy is present in one or both of the parents may pass here without comment. A significant feature of the table is the number of cases which come under the heading of

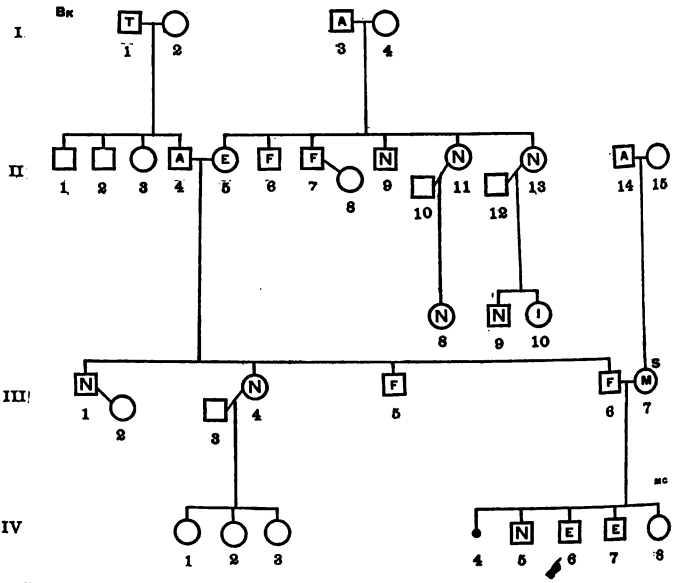

CHART I. Bk. This chart shows half of each fraternity defective. The mother of the patient has severe sick headaches and shows some signs of inherited syphilis. The father is feeble-minded and has periodic attacks of violent temper. One of his brothers was also feeble-minded, while one brother is a capable business man and a sister is normal. The mother of these was epileptic with two feeble-minded brothers and an insane niece. The father was alcoholic. The patient has one brother epileptic, another normal, and a sister now eleven years old who is healthy and normal.

epilepsy and alcoholism absent in both parents. This will be considered after an examination of Table II—Epilepsy and Feeble-mindedness.

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In the correlation of epilepsy and feeble-mindedness six cases fall under the head of no E, F present in both parents. While the same objection might be raised in this case as in the parents A+E, with epileptic offspring, that a further search in the pedigree might reveal cases of epilepsy, a study of pedigree charts shows epilepsy occurring frequently with feeble-mindedness. Davenport and Weeks in *A First Study of Inheritance in Epilepsy* have pointed out that "epilepsy and feeble-mindedness show a great similarity of behavior in heredity." Chart I Bk, shows feeble-mindedness and epilepsy existing side by side, seeming to indicate that the same defect appears in either form.

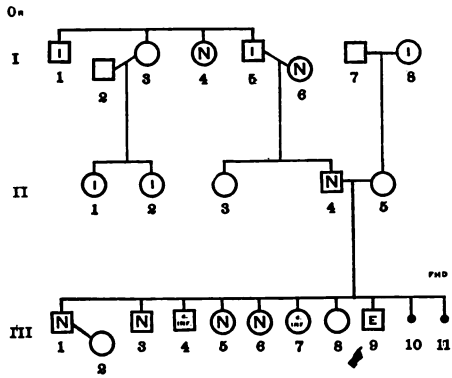

CHART II. Or. This chart shows the defect appearing as insanity in the ancestors and as epilepsy in the child. The father of the patient, II, 4 is a normal, temperate, and intelligent man; but his father, uncle and two cousins were insane. The mother of the patient, II, 5 is slightly inferior mentally, and her mother was insane at times from the age of thirty till her death. Of the children, three are normal, two died in infancy, one is delicate, and the patient III, 9 is epileptic. There were two miscarriages.

The group in which epilepsy and feeble-mindedness are absent in both the parents and the cases in which alcoholism and epilepsy were absent in both parents, point to the fact that some further causes must be sought in the heredity. The Or chart throws some light on this subject. This is a case in which there is insanity on both sides of the family. The epilepsy came on in the child when between five and six years, just after beginning school and six

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weeks after vaccination. Examples could be multiplied where the defect of insanity seems to appear as epilepsy in the offspring.

The small number of cases in the different groups in the correlation table makes the percentages of affected offspring of little value, particularly as the number in the fraternity includes the unknown and those who died in infancy. Furthermore, unaffected individuals may develop epilepsy at almost any age. Subsequent studies may be made, considering the ages of those unaffected and weighing the possibilities according to their ages. Another factor to be considered is the nocturnal epilepsy of which the relatives and even the person affected may be ignorant.

In the studies that have been made of epilepsy, it appears that epilepsy acts as a recessive trait. It also seems probable that feeble-mindedness is a trait that is associated with epilepsy, and epileptics may spring from either epileptic or feeble-minded parents. In some cases, also, such other neuropathic conditions as insanity on one or both sides of the family are found in the line of descent of the epileptic.

Assuming without further discussion that epilepsy is inherited in Mendelian fashion, the material has been classified according to two hypotheses.

Hypothesis I. Epilepsy is a recessive trait, inherited only from epileptics and appearing only as epilepsy. Fittings have been made as closely as possible from all the evidence that the charts contain.

In this table every individual not actually epileptic is classed as normal, disregarding every other trait. Individuals are marked X who are unknown, or who died in infancy. Epileptics are considered 0. Individuals, themselves normal, but transmitting epilepsy, are marked 1, or simplex. Normal individuals with normal offspring are considered duplex and are marked 2.

Under Case I, 0 x 0, are two cases with both parents epileptic. Under these conditions one would expect 100 per cent epileptic. The figures show seven children. Two of these died in infancy, two are epileptic, and three are not epileptic. In the Bn case, the father had epileptic attacks from his twelfth to his thirty-fifth year. The mother began to have epilepsy between her fifteenth and sixteenth years and it still continues. The attacks are of the petit mal type. The children are as follows:

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HYPOTHESIS I.

EPILEPSY IS A RECESSIVE TRAIT, AND IS INHERITED ONLY AS EPILEPSY.

Classification of Matings According to Hypothesis 1.

I. 0 x 0.

Case	E	N	X
Ds IV	1	.	.
Bn	1	3	2
Total	2	3	2

E expected 100%

II. 0 x 1.

Case	E	N	X
Ty III	1	4	2
Dn II	1	6	.
E F II	1	.	.
E 5	1	2	3
As	2	4	.
Vt	2	5	.
Dy	2	3	1
Mi	2	2	.
Br 1	1	.	.
Ds I	1	.	.
Ds II	1	2	.
An	1	1	5
D 1 III	5	5	3
D 1 IV	1	6	3
D 2 II	1	5	1
Wc	2	6	.
Hn II	4	3	2
DmIII	1	.	1
Dm I	2	4	1
Dm II	1	1	.
Kt II	3	5	3
Aw II	1	4	1
P K I	1	3	4
Hy II	1	4	5
Bs II	1	1	.
Bs III	2	3	1
Sa	1	1	4
Total	43	80	40

E expected 50%
E observed 34.9

III. 0 x 2.

Case	E	N	X
Ty I	.	5	.
Vt	.	3	2
Rn III	.	6	5
My II	.	4	.
Bk	.	4	.
Mi 1	.	8	.
A S I	.	3	1
An I	.	3	3
Gn II	.	2	1
Mx I	.	3	6
Ce	.	9	1
We I	.	4	.
Gs I	.	5	.
Gs III	.	2	.
Total	.	61	19

E expected 0%
E observed 0%

IV. 1 x 1.

Case	E	N	X
Bz 2	1	2	3
Ty II	1	.	1
Fk II	1	2	.
Bz II	1	5	.
Wt II	1	8	1
Pe III	1	2	6
E F II	2	2	7
E 3	4	7	1
E 5	1	8	1
Bz 1	1	1	.
Bz II	1	2	.
En	1	1	2
Ky	2	4	1
Sw	2	7	1
Rs	1	.	.
Mh	2	4	2
Pl II	1	2	.
Pl III	1	.	.
Cn	3	1	.
Rn II	1	2	.
Rn II	2	8	1
Mi	3	5	.
My	1	4	1
Cs 1	1	3	1
Cs II	1	2	2
Bk III	2	2	.
Bk I	1	5	.
Ma 1	1	5	.
Ma I	1	2	1
Ma II	2	3	.
Bh II	1	5	.
Mi II	1	8	1
Mi II	1	5	2
Br I	1	1	.
Ot I	1	1	1
Ot II	1	4	.
De II	1	5	.
Kg II	1	1	.
Fi	2	1	6
Se III	2	.	1
B F	1	5	2
Ch I	1	3	.
Ch II	1	4	1
Wb II	1	1	.
Wb II	3	5	3
Hd II	4	4	2
Fw II	1	5	2
Mx II	1	8	2
Be I	1	4	.
In 1	4	3	.
Gs II	2	6	.
Gs IV	1	2	.
Tw	1	1	2
Lj	1	3	3
Gr II	1	3	.
Or	1	5	2
Ce	1	.	.

V. 1 x 2.

Case	E	N	X
Gu	.	4	.
Mg	.	4	.
Tr	.	2	.
Sa II	.	3	.
Total	.	13	.

E expected 0%
E observed 0%

VI. 2 x 2.

IV. 1 x 1.—Con.

Case	E	N	X
Fe II	1	1	5
Sn II	2	4	1
Wc	1	.	.
Hn	1	5	.
Pk I	2	1	.
Tr II	1	2	.
M E	1	3	.
Dm II	1	3	5
Dm II	2	4	.
Dm II	1	3	1
CB 1	1	5	5
Kt 1	1	1	.
Kt I	1	.	.
Kt 1	1	1	1
Cy I	1	2	1
Pk II	1	3	6
Ws II	1	5	.
Ws I	1	10	2
Bz 1	3	3	.
Wr	1	2	.
We I	1	4	.
We II	1	2	3
Gt	1	3	.
Rh III	1	1	2
Wn	1	2	1
WnIV	2	6	.
Mg 1	1	4	1
Mg II	1	4	.
Mg II	1	4	1
Bg	1	6	2
Kg 2	1	1	3
Kg 2	1	2	.
A S	1	1	2
Wa 1	1	7	.
Wa II	1	1	.
Wa II	1	2	.
WaIII	1	2	.
Sg II	1	5	.
D 11	1	3	1
Sy	2	.	.
Br 2	2	4	1
Ln II	2	4	14
Gu 1	1	5	8
Gu II	1	2	5
Gu III	1	2	.
Gu IV	1	.	.
Total	137	328	133

Expected 25%
Observed 29.6%

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E, born 1886. Epilepsy began when he was about fourteen. They are grand mal in type.

C, died of diphtheria at five years. Never had convulsions.

D, died of pneumonia at two and a half years. Never had convulsions.

H, born 1889. Is normal as regards epilepsy.

A, born 1894. Is normal as regards epilepsy.

Al, born 1898. Was slow in school, nervous and difficult to manage. Does not have epilepsy but is not a normal child.

These persons are all young and still have the possibility of developing epilepsy. On the other hand, H and A have passed the age when it developed in the parents. The father stopped having fits before the birth of the two youngest but not before the birth of H, who is not affected.

In Case II, 0 x 1, one parent is epileptic and by hypothesis the other is simplex. Under such conditions 50 per cent of the offspring might be expected to be affected in contrast to the 34.9 per cent who actually are.

In Case III, 0 x 2, all offspring are expected to be normal somatically with half of them carrying the possibility of transmitting the defect. The arbitrary fitting of cases to the hypothesis makes these cases correspond actually to expectations.

Case IV, 1 x 1, assumes that all parents having epileptic children are simplex unless they fall into one of the other classes. In that case we should expect to find 25 per cent affected and the other 75 per cent somatically normal, although 50 per cent would be simplex. What we actually get is 29.6 per cent affected.

Case V, 1 x 2, corresponds exactly with expectations. The only evidence that an individual is simplex is that he has had epileptic children by another mating. We find only four cases of that sort.

Case VI, 2 x 2, includes all cases of normal parents producing normal children. None have been recorded under this heading as they would not differ from such cases not in epileptic strains.

Hypothesis II. According to the second hypothesis, epilepsy, feeble-mindedness and insanity are due to a common defect, behaving as a recessive trait, which may appear in any of the three forms. This naturally shows a larger number of cases, since any epileptic, insane or feeble-minded person is considered as 0.

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HYPOTHESIS II.

EPILEPSY, FEEBLE-MINDEDNESS AND INSANITY ARE DUE TO A SINGLE RECESSIVE TRAIT.

I. 0x0.

Case	E F I	N	X
Pe II	3	.	.
Pe II	1	.	.
E F 1	4	1	2
EF III	6	1	.
Bz III	1	1	.
Wb	2	.	.
Wb	8	.	3
E 6	3	.	.
E 4	1	1	.
E 7	1	.	.
E 3	9	3	.
E 1	7	1	.
E 2	2	1	1
Rn II	1	.	.
Rn II	3	2	5
Ds IV	1	.	.
Hn	5	1	2
Bn	1	3	2
Tr II	2	1	.
Aw II	6	.	.
Aw II	1	3	.
Aw I	3	2	.
Bs I	4	2	.
Bs II	5	.	.
Rh IV	2	.	2
Total	82	23	17

Expected 100%
Observed 78%

II. 0x1.

Case	E F I	N	X
Ty I	2	1	1
Ty II	3	3	.
Ty III	3	1	2
Ty III	1	5	4
Ty IV	1	1	6
Ty II	3	.	.
Ty III	1	1	2
Bz 2	1	1	.
Bz	3	7	1
Dn II	3	4	.
Dn III	2	1	.
Pe III	1	2	6
E F I	4	2	4
E F II	3	2	4
As	2	4	.
Vt	2	5	.
Mh	1	4	2
Dy	2	1	2
Bk II	2	2	.
Bk III	2	2	.
E 5 III	7	2	2
E 5 IV	3	1	.
E 3	1	1	1
Rn II	1	1	2
Rn II	1	5	5
Rn II	3	5	2
Mi II	2	.	2
Br III	1	.	.
De	1	5	.
Fi	3	.	6
Ds II	1	2	.
Bg II	1	6	3
Kg 2	1	2	.
As I	1	2	2
As II	1	1	2
An	1	2	3
D 2 II	1	5	1
Gn II	1	.	4
Hd II	3	3	4
Gr I	3	2	2
Fe II	2	.	.
Wc I	1	4	3
Wc III	2	6	1
Tr II	1	2	.
Dm I	2	4	1
Dm II	2	2	5
Kt II	1	2	.
Kt II	3	6	2
Aw III	1	2	3
P K I	1	3	4
Hy II	1	4	5
Bs II	2	.	.
Total	98	129	99

Expected 50%
Observed 43%

III. 0x2.

Case	E F I	N	X
My II	..	4	.
Rn II	..	8	1
D 1 IV	..	4	1
Gn III	..	2	.
Gn II	..	2	1
Ce	..	9	1
Dm III	..	4	3
C B II	..	3	2
Total	..	36	9

Expected 100%
Observed 100%

IV. 1x1.

Case	E F I	N	X
Ty IV	1	.	3
Tn I	2	4	3
Bz 2 II	1	2	3
Bz 1	1	4	.
Wt II	2	2	4
Wt II	1	8	1
Dn III	1	2	.
Dn IV	1	1	.
E F I	2	2	7
Bz III	2	4	3
Bz II	2	4	2
Bz I	1	1	.
Bz II	1	2	1
En II	1	1	3
As	1	1	.
Ky	2	4	2
Sw	2	6	2
Rs	1	.	.
Pl II	1	2	.
Pl III	1	.	.
Cn III	3	1	.
Ml	3	4	.
Gu II	1	.	.
Gu II	1	3	3
Bk	3	3	.
Ma II	2	3	.
Ma I	1	2	1
Kg	1	1	.
B F I	1	5	2
B F II	2	1	.
B F II	1	.	4
B F II	1	.	4
E 4	2	5	.
My I	1	4	.
My II	3	3	.
My II	1	8	2
My II	1	.	.
My III	1	3	1
Rn II	1	2	.
Rn II	1	6	4
Mi II	1	6	.
Br II	1	1	.
Ot I	1	1	1
Ot II	1	4	.
De II	3	3	4
Ds III	1	2	.
Ds III	1	1	1
Ds IV	1	3	1
Se III	2	.	1
Mg I	2	3	1
Mg II	2	3	1
Mg II	1	4	.
Kg II	2	.	.
Wa I	1	7	.
Wa II	1	2	.
Wa III	1	2	.
Wa I	2	5	.
Wa II	2	.	.

V. 1x2.

Case	E F I	N	X
Ty IV	..	4	.
Gu	..	4	.
Mi I	..	8	2
Mg II	..	3	.
Sa	..	3	.
Total	..	22	2

Expected 0%
Observed 0%

VI. 2x2.

1V. 1x1.—Con.

Case	E F I	N	X
Sg II	1	5	.
Sy	2	.	.
Br I	2	4	6
Ln	2	4	14
Gn 1	8	3	8
Gn III	1	2	1
Gn II	1	2	1
Gn III	1	2	3
Gn III	1	2	.
Gn II	1	1	2
Gn III	1	.	.
Hd I	1	3	.
Fw II	1	5	1
Mx II	1	7	.
Be I	1	4	.
Be II	1	5	.
Ck 1	1	3	1
Ck II	1	4	1
Tw I	1	1	2
Tw II	1	2	6
Li	1	3	.
Bh	2	2	3
Or	1	5	.
Sn	3	4	.
Hn	2	4	.
Pk	2	1	.
M E	1	3	.
Dm I	1	4	.
Dm II	2	4	.
Dm II	1	3	1
C B II	1	1	1
C B II	1	5	5
Kt I	2	2	.
Aw I	1	7	.
P K	1	3	5
Ws II	1	5	1
Ws I	1	10	3
Sa II	1	1	4
Wr I	1	5	1
W	1	2	.
We I	1	4	.
We II	1	2	3
Gt III	1	3	.
Gt I	1	2	4
Rh II	1	10	.
Wn II	2	1	.
Wn IV	2	6	.
Total	145	300	142

Expected 25%
Observed 32.6%

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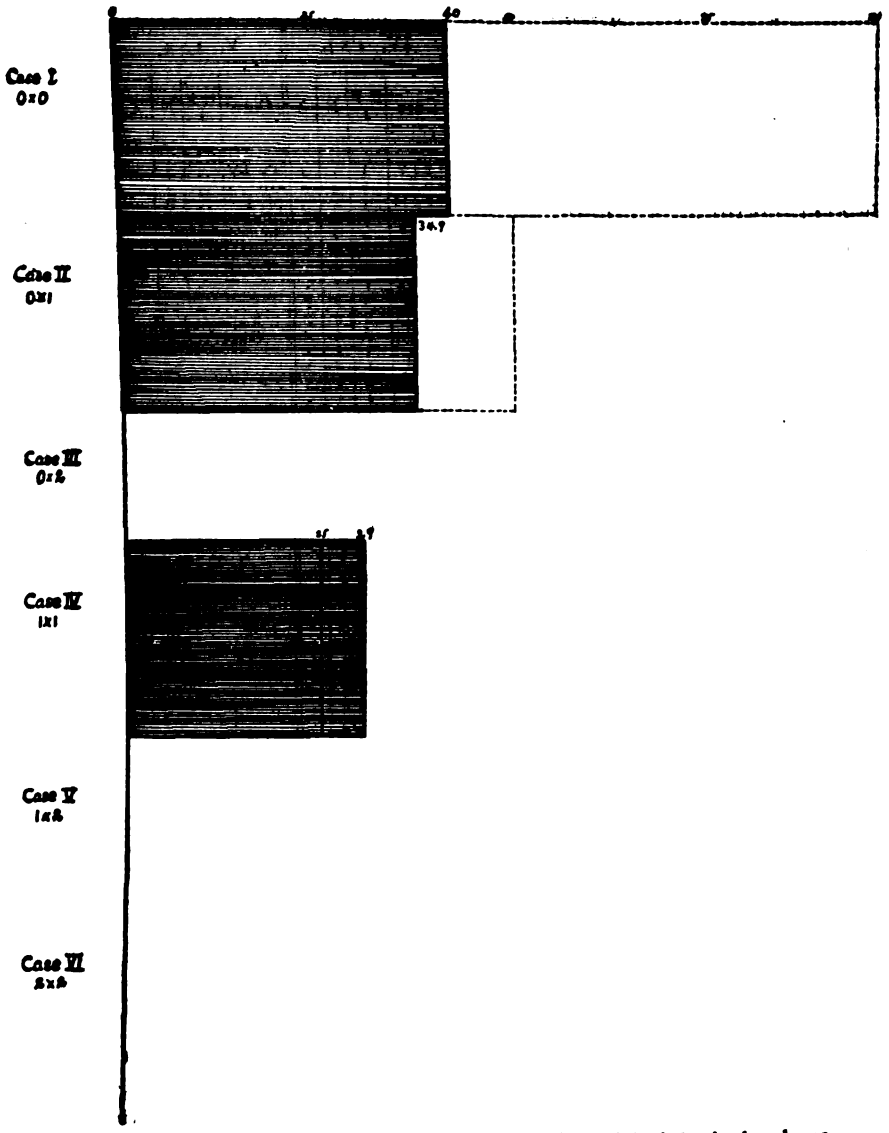
Case I, 0 x 0, under this hypothesis gives us 78 per cent affected of the expected 100 per cent.



HYPOTHESIS I. Epilepsy is a recessive trait and is inherited only as epilepsy.

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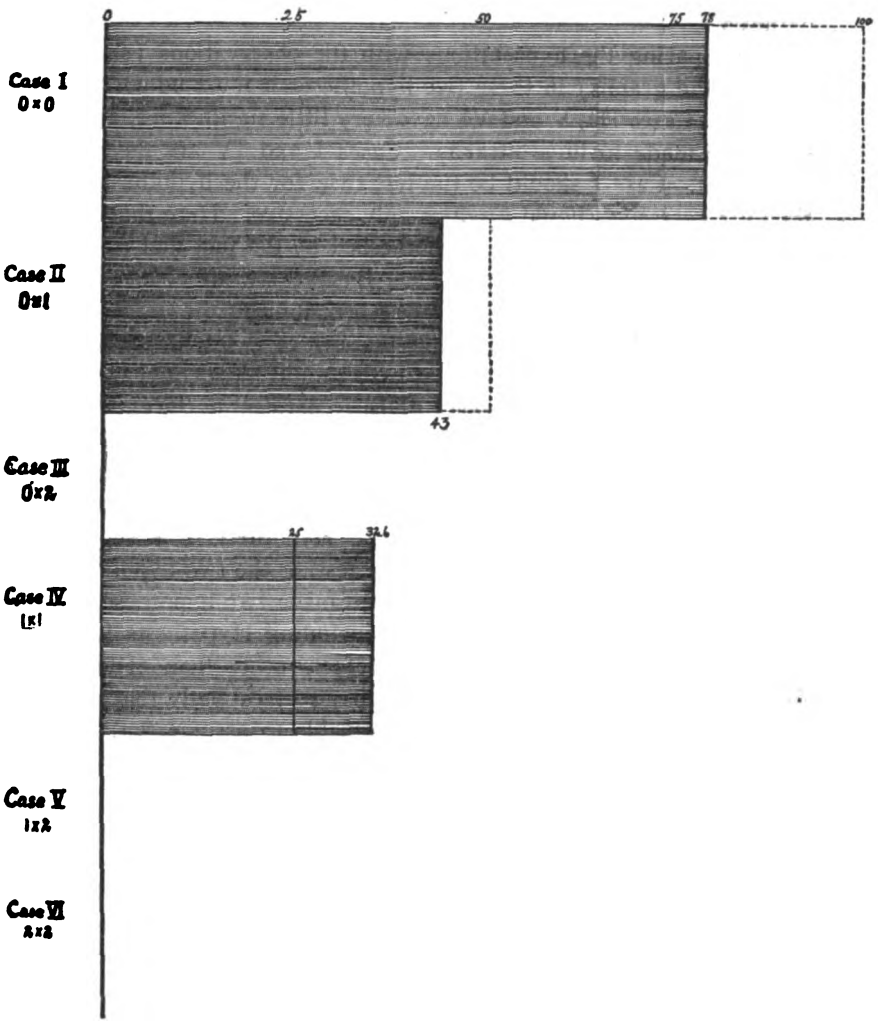
Case II, 0 x 1, shows 43 per cent affected instead of the expected 50 per cent.

In Case III, 0 x 2, there is a perfect fitting as in hypothesis I.



HYPOTHESIS II. Epilepsy is the result of a defect that is inherited as a recessive trait, which may also appear in the form of feeble-mindedness or insanity.

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In Case IV, 1 x 1, instead of the expected 25 per cent, there are 32.6 per cent affected.

Case V, 1 x 2, shows a perfect fitting.

For Case VI, 2 x 2, no cases have been recorded as in Hypothesis I.

In comparing the expectations with the observations (shaded parts of the graphs) in these two hypotheses it must be borne in mind that Cases III, V and VI have very little significance, as the cases are made to fit arbitrarily. Cases I and IV are the most significant. Case I should be the test case for the hypothesis, as the pure recessive should produce only recessive. Here that case is rendered of little value in Hypothesis I by the fact that so few families come under that heading. By the law of chances the larger the number of cases the more probabilities there are of a correct proportion. As the larger number of cases, in each hypothesis, falls under Case IV, that case should have equal weight in each hypothesis. Hypothesis I gives 29 per cent to the expected 25 per cent, Hypothesis II, 32.6 per cent. Case II, 0 x 1, gives a better fitting for Hypothesis II. As a whole Hypothesis II gives a better fitting, but disregarding Case I, which is of little value on account of the small number of cases, Hypothesis I is slightly better. The similarity in the results of testing the two hypotheses is to be expected rather than not, because the two hypotheses do not oppose each other, Hypothesis II including Hypothesis I. A study of individual families shows defects other than epilepsy, contributing to the inheritance of epilepsy so frequently that with this fact in mind it hardly seems justifiable to assume that Hypothesis I is entirely correct. There is greater evidence from the actual pedigrees that Hypothesis II approaches more nearly the truth. This hypothesis, however, is extremely broad for a working basis.

It is reasonably sure that epilepsy is due to some nervous defect. Careful search shows a defect on each side of the family in such a large majority of cases that one is led to seek an explanation in each case where such defect is not found. One explanation may be that the pedigree has not been extended far enough to reveal the defect in the germ-plasm, since the defect may remain hidden for generations under favorable conditions. (See Chart III.) Another possibility is that a defect on one side of the family combined with lack of constitutional vigor on the part of the indi-

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vidual, or a severe strain, such as a severe illness may bring out a defect that would otherwise have remained hidden. (See Chart IV.) The nervous defects found in the ancestry of the patients include epilepsy, insanity, feeble-mindedness, extreme nervousness and migraine. The last two, together with alcoholism, sexual immorality and idiosyncracies, such as very violent temper or periodical attacks of ugliness, seem to be evidences of nervous weakness rather than actual causes of the defect.

With the large number of cases available and the short time that has thus far been devoted to the field work there has been a certain selection of cases. The object, thus far, has been to dis-

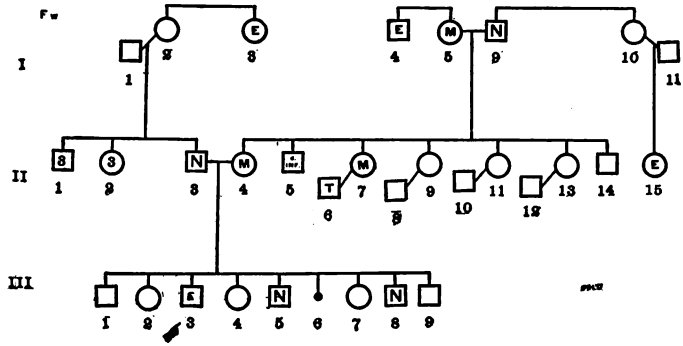

CHART III. Fw. This chart shows epilepsy on both sides of the family but not in the direct line of descent, illustrating how a defect may exist in the germ-plasm, but remain hidden until favorable conditions for its reappearance occur. This chart also shows the importance of complete and well extended pedigrees, for in this case the defect appears in the fraternities of the grandparents. I, 2, II, 3, and II, 4 are normal individuals carrying the possibility of transmitting the defect. It is not clear whether I, 5 or I, 9 is the simplex individual in that mating, possibly both are.

cover how defects have appeared in a family, rather than to discover if every case, or what proportion of cases, shows heredity. In some cases where the hospital records have been entirely negative in regard to heredity, visits to the family and to the family physician have shown a striking history of heredity in the family. Such occurrences lead one to believe that a much larger proportion of cases are hereditary than the hospital records show. The field work has revealed syphilis in the parents, where the information

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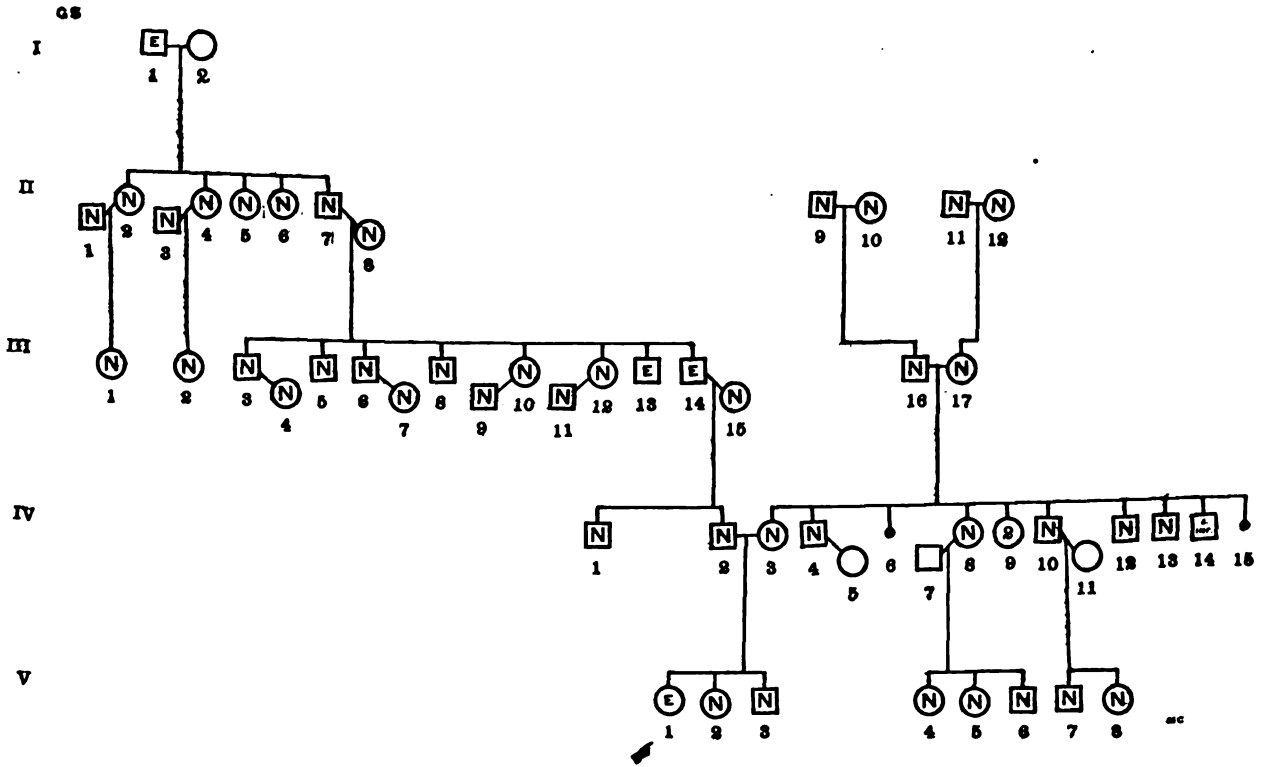

CHART IV.—*G. S.* This chart points to the possibility that a simplex individual may give way under a severe strain, who would not otherwise show epilepsy. I, 1 was an able and much respected man who had fits in the early part of his life. He had five children all normal. II, 7 normal, married a normal woman and had eight children, two of whom were epileptic. III, 13 is in a hospital for epileptics. No further particulars. III, 14 is a man of considerable ability. After the exposure and hardships of the Civil War he developed epilepsy to a slight degree. IV, 2 is normal, although not a man of much force. His wife is entirely healthy and normal, and of a normal family as far as could be learned. V, 1 was a bright, healthy, rather precocious child until three years of age. At that time she had a severe attack of spinal meningitis. Following that she had epilepsy in a severe form, lost her speech and became very feeble-minded. The absence of any neurotic taint on the mother's side of the family raises the question whether the child would ever have developed epilepsy if she had not had the sickness in addition to the hereditary tendency.

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in the family history sheets have given no indication of it, in enough cases to lead one to suspect that if the absolute truth were known this would be a more considerable factor than it has hitherto been recognized to be. It is now a question whether congenital syphilis would manifest itself as epilepsy were there not already an hereditary tendency to it, since in some cases we find evidences both of defective heredity and of congenital syphilis. Chart Cn (V) is an example of this. The information is scanty as it had to be obtained through an interpreter. Of four children

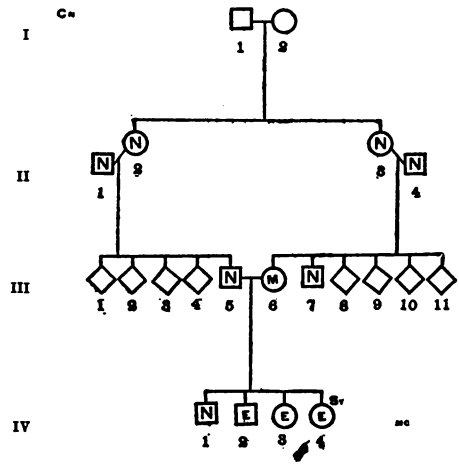

CHART V. Cn. A chart showing a family of four children, three of whom have been microcephalic and epileptic. One died at three and a half, another two and a half, the third, now four years of age, shows the marks of congenital syphilis, in having Hutchinson's teeth. The father, who died as the result of an accident, is reported to have been normal. The mother has sick headaches and fainting spells. The father and mother were first cousins.

one is normal and three have been microcephalic and epileptic. Two of them are dead but the one that is living shows the marks of syphilis by having Hutchinson's teeth. The mother is subject to sick headaches and has fainting spells. The father is believed to have been normal. The father and mother were first cousins. Other cases of epilepsy in the family are denied. The marriage of

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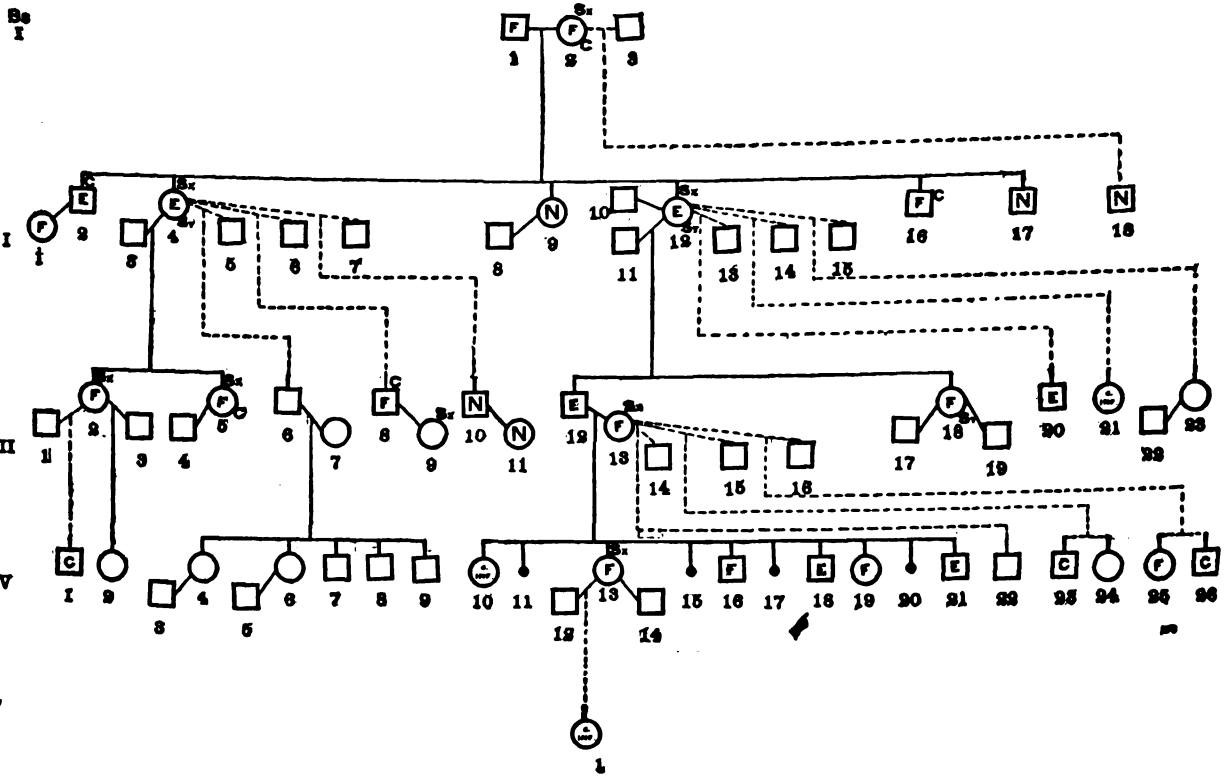

CHART VI.—Bs. This chart shows a kind of family that is not uncommon in isolated communities. This family has been supported by the same town for at least sixty years. IV, 18 is now in an asylum for the chronic insane, and IV, 19 is committed to a state industrial school. The neighbors account for the normal members of the family by the illegitimate blood in the family.

I, 1 and 2 lived in a shanty in the woods and sheltered all the tramps that came along. I, 2 encouraged her children in stealing. Both died "on the town." II, 2 spent much of his life in jail for petty thieving. He was epileptic. II, 4 was feeble-minded, epileptic, immoral, and when she died was badly eaten with syphilis. II, 12 was a notoriously bad character, badly diseased, kept a disorderly house, and gave birth to at least five children, some of whom were born in the alms-house. It is doubtful if she were ever legally married. III, 12 was epileptic and ugly. He married a feeble-minded woman who has served a term in prison, and was forced by the town authorities to marry her present husband III, 16 just before the birth of the second illegitimate child by him. She was not allowed the custody of some of her children on account of her mode of life, and she does not know the whereabouts of some of them.

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first cousins naturally tends to bring out any defect that may be hidden in the germ-plasm, and the combination of poor inheritance and syphilis in this case was particularly unfortunate.

The results of the study, so far, may be summed up as follows:

1. We have no conclusive evidence that alcoholism in the parents is a cause of epilepsy in the children, although alcoholism is often associated with epilepsy. It may be regarded as a concomitant of epilepsy and an additional evidence of nervous weakness.

2. Feeble-mindedness is also associated with epilepsy and there is some evidence that it is caused by the same defect that caused the epilepsy.

3. Fitting the material to the two hypotheses, first that epilepsy is a recessive trait that is inherited only as epilepsy and second, that epilepsy, feeble-mindedness and insanity are due to the same defect which may appear in the form of any one of them, there is no striking evidence in favor of one to the exclusion of the other. The truth probably lies somewhere between the two.

4. While we are not in a position to say at present whether every case of epilepsy is inherited or to say in what proportion of cases it is inherited, we can say that in a large proportion of cases there is some nervous defect on both sides of the family. These defects may be epilepsy, feeble-mindedness, insanity, extreme nervousness, migraine, alcoholism, sexual immorality and lack of moral sense.

The ultimate purpose of the study of the inheritance of epilepsy is to learn what are the expectations in regard to the condition of offspring in epileptic families. These studies throw some light on the subject. We cannot hope that the malady that has baffled the best minds in the medical profession since before the time of Christ will yield up its secret for a few months of work. This method of approach to the solution of the problem seems the most hopeful one that has yet been tried. The prevention of the birth of epileptics is a far more feasible scheme, in our present state of knowledge, than the cure of those already affected. The work for the present is largely investigative and scientific investigation of necessity moves slowly. With a scientific knowledge of what may be definitely predicted if epileptics or persons of epileptic strains marry and have children, we shall be in a position to begin legislation and popular education on the subject.

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A STUDY OF THE FORMS OF MENTAL DISEASE IN CASES SHOWING NO GROSS LESIONS IN THE BRAIN AT AUTOPSY.*

By C. G. McGAFFIN, Ph. B., M. D.,

Pathologist and Assistant Physician Taunton, Mass., State Hospital.

Pathological studies most often arise from those cases that show marked lesions. In psychiatric pathology those brains have been particularly worked over in which some severe lesion in meninges or encephalon was the prominent factor.

This study proposes an attempt to classify those cases in which at autopsy no gross lesion was demonstrated, and the writer of the autopsy report saw nothing worthy of note, or states in so many words, "nothing pathological noted in the gross."

Among the 450 autopsies at the Taunton State Hospital there were found to be 70 such cases; 15.5 per cent then showed normal-looking brains. Of these 40 were females and 30 males.

Of the females 13 cases showed some thickening of the basal vessels, but in only two cases was it spoken of as "marked." In 13 cases, also among the females, congestion of the pia mater was noted; in three cases there was an inflammatory exudate and in only one case any thickening of the pia. In 50 per cent of the female cases the dura was adherent to a greater or lesser degree, but the large percentage of this group was "but slightly adherent." In five cases there was noticeable thickening.

Among the 30 males, there was some thickening of the basal vessels in seven cases and in only two was the condition severe, and one of these showed calcification. In 10 cases the dura was noted to be adherent and in three cases thickened. In 14 cases the pia was the seat of an inflammatory process with congestion and exudation.

However, in the whole series of 70 cases, there was no evidence of any irregularity in surface pattern, diffuse or focal atrophy, cysts, pigmentation,, sclerotic or other foci. The ventricles were smooth and the cerebellum not affected.

The diagnostic classification of these 70 cases is interesting. They have been separated into groups, and in this arrangement,

* Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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paranoia and paranoid condition going into the dementia præcox group and involution melancholia into the manic-depressive. They are as follows:

Dementia Præcox group	21
Manic-depressive group	18
Delirium group	13
Senile group	8
Imbecile group	4
Alcoholic group	3
Miscellaneous group	3
	70

From this it will be seen that 55 per cent of the study is taken up with dementia præcox and manic-depressive insanity, and we stop to consider the pathological unknown. There is nothing in the gross to help us and when microscopy is to be relied upon, there is but little more. These small groups count for nothing in a general way. However, in a study of 17 out of the 21 cases of dementia præcox, satellite cells were found in 60 per cent of the cases close to the large pyramidal cells. In 90 per cent of the cases there was some evidence of acute cell change, such as axonal reaction, disintegration of the Nissl granules and thickening of the nuclear capsule. In a large percentage of these cases the yellow pigment was present to excess, and in some cases the pigment seemed to have dislodged the nucleus altogether and in its place a spot of bright yellow staining material in the Nissl sections.

The microscopic study of the manic-depressive cases showed a small percentage with acute cell change, but for the most part the picture was negative except for a satellitosis similar to that found among the dementia præcox group.

The delirium group makes up 18 per cent of the whole number in the series. The etiology is the important point in these cases. In every instance it is traceable to some physical condition. In two there was pneumonia; in three pulmonary tuberculosis; in eight some grade of acute nephritis. In every case the microscopic diagnosis confirmed the anatomical given above. Death came early in these individuals after commitment, showing the infection to be extremely virulent. The average time in the hospital was 9 9/13 days and of the group only three were resident over 10

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days. Prognosis is poor in delirium cases and the etiology should be carefully studied when possible to give greater certainty as to therapeusis.

The cases diagnosed as senile dementia were eight in number, five females and three males. Six of these cases were only resident two months and under, the shortest period being three days. The average time of duration was 20 days. In some of these cases physical causes would seem to be the etiological factor in the final act of commitment. Too often cases over 60 years have been called senile dementia, when there may have been some basis, perchance psychogenetic or physical other than senile changes, for an acute attack arising after the fifth decade.

The following are abstracts from the more typical cases:

11.21 (19645), female, 69, admitted May 8, 1911, was said to be depressed and suicidal; memory impaired; family history negative. Injury to head by falling about a year ago; began to be irritable immediately following this and continued to grow worse. On admission, temperature 100.4°, numerous bruises on body, many of which were septic; pain complained of over epigastrium. Two days later respirations 45; pulse 120, small and thready; vomited quantities of bile stained fluid material. No conversation could be carried on with her as she was constantly in a stuporous condition. Death, May 12, 1911; cause, acute gastritis and bronchopneumonia. Autopsy showed an acute inflammation of mucous lining of stomach, bronchopneumonia, serious pericarditis, some arteriosclerosis.

In this case we find an acute brain disturbance following the injury to the head, with restlessness and irritability. Later septicæmia with pneumonic symptoms.

11.3 (19514), male, 61, admitted January 16, 1911. Onset was said to be gradual; was confused and restless in general hospital where he was before admission to Taunton State Hospital.

ABSTRACT OF GENERAL HOSPITAL RECORDS.

"Married, born in England, loom fixer by occupation, admitted to this hospital Jan. 7, 1911.

"*Past History.*—Had bronchitis a year ago.

"*Present History.*—Had shortness of breath and unable to work.

"*Physical Examination.*—Sibilant and sonorous rales heard distinctly over bronchi; coughs a little and has slight temperature; heart shows mitral leak, also enlarged; apex beat to left of nipple line.

"*Urine.*—Normal.

"Developed mental symptoms and transferred to Taunton State Hospital Jan. 16, 1911.

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"*Condition on Discharge.*—Unchanged."

On admission temperature 101.2°; area of consolidation in left lung; urine albuminous. Mentally was somewhat confused, but answered most questions relevantly. No active hallucinations or delusions elicited. Remained quiet, temperature fluctuating between 99° and 101°. Death, January 25, 1911. Diagnosis, lobar pneumonia. Autopsy showed double lobar pneumonia, much enlarged spleen, acute parenchymatous nephritis.

In this case we have a male, aged 61, some memory defect and mental confusion, but no restlessness, hallucinations or delusions. Admitted from a general hospital, with temperature 101°, and beginning symptoms of lung and kidney involvement.

08.9 (18187), female, 70, admitted March 31, 1908. Present attack said to have begun March 1, 1908. At that time was bedridden, much œdema of legs and general anasarca; urine albuminous. Developed hallucinations and was restless and irritable. History shows no real evidence of mental trouble existing before date stated above. Physical examination revealed œdema, general anasarca, albuminous urine, with numerous casts, dyspnœa, irregular, rapid heart. Mentally was entirely oriented, memory not much impaired, auditory hallucinations. Death, June 1, 1908. Cause, organic heart disease. Autopsy showed hypertrophied heart, general anasarca, acute parenchymatous nephritis.

In this case we have a female, aged 70, onset sudden, hallucinations of hearing most important symptoms. Physical signs of heart and kidney lesion marked.

In many of such cases, then, are we not dealing with some acute psychosis arising upon some physical basis rather than with senile dementia? Too often are symptoms taken for granted as belonging to some definite form of mental disease when they are but a part of the physical picture presented on the mental side, and would clear up with the alleviation of the clinical symptoms.

The other groups contain too small a number of cases for interesting and important study, and the diagnoses are not so much in doubt. Needless to say, errors in diagnosis will be always with us, and so will the prognosis suffer. But the pendulum can swing too much one way as the other, and needless stress be laid upon the correct diagnosis of a case. Etiology and therapeutics should be the subject of more symposiums. The environment of the patient before commitment, the physical condition, his mode of life, together with his previous mental make-up—a careful study of these points will assist much in the proper therapeusis of the individual case.

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TREATMENT OF THE INSANE IN BRITISH COLUMBIA.*

By C. E. DOHERTY, M. D., C. M.,
Medical Superintendent, Public Hospital for the Insane, New Westminster, B. C.

In the selection of the subject of this paper, which cannot contain any interesting features save that of an illustration of the remarkable increase of population in Western Canada during the past few years, together with the rapid rise of its number of insane, I must lay part blame upon my Canadian friend Dr. Burgess, for when at a loss to know just what subject to select Dr. Burgess hinted that a history of the treatment of the insane in British Columbia might be acceptable. Hence my decision, and I now crave the indulgence of a few minutes of your time while I review this.

The earliest record of an insane person in British Columbia dates back to 1850, but during the rush to the Cariboo gold-fields in the years 1858 and 1859 many new-comers broke down under the strain and hardships endured, and had to be taken care of by the authorities. The nearest asylum at this time was in the State of California, consequently those cases which were at all violent or turbulent, and unable to make this long journey, were sent to the "lock-up" at Victoria for safe-keeping.

When female patients began to appear, however, it became evident that the gaol, which was not at all large, could not accommodate all. In 1872 the old Royal Hospital at Victoria was remodelled and converted into the "Provincial Asylum," under the management of the Provincial Secretary's Department, as it still remains to-day.

Prior to this time there had been no provincial act dealing with asylums or the insane, so in 1873 the "Insane Asylums Act" was passed.

At the end of the year 1876 the building was full to overflowing and could accommodate no more, and as it was deemed advisable not to extend the institution on that site the then existing govern-

* Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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ment decided to remove to New Westminster and locate upon a government reserve.

This institution, at first accommodating only 38 patients, rapidly grew, until in 1908 we were treating 509 patients of both sexes. At this time every indication pointed to the fact that the property at New Westminster, 30 acres in all, was too small for any further extension or enlargement of the old hospital; accordingly it was decided to commence work on a property, consisting of a thousand acres situated at Coquitlam, which had been acquired by the government some few years previously, but which still remained a virgin forest with considerable low swamp land. Tents were secured and some twenty patients sent out to clear land for temporary buildings, which were completed before the fall of the same year.

In the spring of the following year we started to clear land in earnest; over forty patients, many of whom were excellent axemen, with the assistance of two donkey engines, also manned, with the exception of engineers, by patients, managed to clear up ready for the plough some eighty acres. During the winter of 1909 it was decided to push along the work of clearing as fast as possible. The temporary quarters were enlarged until we could accommodate some 65 of our best working patients; three more donkey engines were secured and in the spring work again commenced. The manner in which our patients took hold of this work surprised me, one patient alone during one month handling 17 tons of blasting powder.

By the fall of 1910 some 500 acres were cleared and all lowland dyked and completely underdrained.

In the meantime the provincial government had called for plans for a complete new institution to accommodate 1800 patients, and had opened a competition in which any and all architects were invited to enter, prizes being offered for the plans obtaining first, second and third place in the competition. Franklin B. Ware, state architect of New York, was appointed adjudicator and the plan awarded first prize by him showed a design of an institution arranged in the corridor-pavilion style, consisting of a central administration unit, behind which and connected by corridors showed a steward's office and stores with service quarters above, the kitchen, bakery, etc., being on the third floor.

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The other buildings consist of infirmary, acute and chronic buildings on either side of the administration building in a horse-shoe arrangement, while the convalescent homes, which are completely without the corridor arrangement, show at some distance in front on either side of the administration building; the isolation hospital, the mortuary and laboratory appear in rear on one side, with shops and amusement hall on the other.

All the buildings are absolutely fire-proof, of reenforced concrete throughout and faced with red brick, and now, when about completed, present a very fine appearance.

In connection with our new hospital, which when completed will cost from $1,600,000 to $2,000,000, there are two or three points concerning which I would like to have an expression of opinion, and it was to obtain this from a body of such experienced men as are here to-day that I really permitted myself to become a burden upon this meeting.

Three points which, along with many other features, I insisted upon securing for the hospital, and upon which I laid the most stress, were provisions in construction, first, for the isolation and fresh-air treatment of all cases of acute insanity or acute mania; secondly, a provision for the handling of at least 90 per cent of our chronic insane in congregate dormitories; thirdly, provision of proper buildings for manual arts and crafts training as well as for amusement.

We all know that acute insanity, aside probably from that which accompanies general paralysis, tends strongly towards recovery, and the indications for treatment are, therefore, to assist if possible and not to retard nature in her restorative efforts. A matter which has always weighed heavily upon my conscience, but which I must admit in our old building I was completely unable to avoid, and I have no doubt at all that most other superintendents have had the same experience, is that no matter how well an admission hospital may be equipped with well trained and observant nurses, diet kitchen, hydrotherapeutic apparatus, clinical laboratories, etc., unless special proper provision has been made in construction of your hospital, the acute patient, unless he is to be stupefied with drugs, becomes a disturbing element to all other and less acute new arrivals, and notwithstanding all prejudices to the contrary, in most instances you and I have had to fall back on drugs to the detriment of our cases.

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Our hospital, in its acute buildings, is equipped in such a way that each acute case of the active variety can be treated as individually as if he were the only patient in the hospital, while at the same time every provision is made for an abundant supply of fresh air and maximum sunlight.

We all know how important fresh air is to persons suffering with tuberculosis, while most of us, where it has been given a fair trial, cannot deny that an abundance of fresh air is just as important in the treatment of the exhausting processes of the active variety of acute insanity, and certainly it is sometimes if not generally found that, at the expiration of a given period, say two weeks, the patient's physical condition will be far better if sedative drugs have been withheld than if the physiological effects of these have been maintained.

Our acute buildings contain six large apartments arranged en suite, three in each building, each suite containing a room 15 x 20, with toilet, continuous bath, pack equipment, two attendants' quarters and a small diet kitchen; the walls of each apartment are provided with extremely thick deadened partitions, triple doors and windows, and are also provided with the very best system of forced ventilation. Each apartment may be opened out on to separate compartment of a solarium when the patient's acute symptoms begin to subside and before he is passed along to the regular admission ward.

From my experience I would say that six such apartments are quite ample for an institution of 1800, or where the yearly admission is about 350.

I cannot but believe that fresh-air treatment of acute insanity is a cardinal point and also that while most of these cases are so noisy and so unmanageable that it is impracticable to keep them out of doors, the artificial ventilation, properly carried out, is a splendid substitute if not equally efficacious.

Now regarding congregate dormitories for the chronic insane: most of us can picture to ourselves the old single room provided with a chamber, locked when the patient goes to bed, and visited by the nightwatch hourly or less frequently, and while we will all admit that there is a certain percentage of these cases unfit for dormitories, the strongest opponents of this system will agree, I think, that the percentage is not more than from six to ten per

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cent of the chronic population of any insane hospital. These, of course, we will continue to treat in single rooms so arranged in an octagonal manner that even here it will be hardly necessary to keep the doors closed.

Our congregate dormitories are so arranged that each holds 50 patients, and that two dormitories can at the same time be under the constant supervision of one night nurse who never leaves his post unless relieved. These dormitories are all artificially ventilated so that no widnows are open; patients have access to the toilets and fresh water throughout the night; no bedchambers are permitted and the result of such an arrangement is not only an improvement in the general atmosphere of the place and the night discipline of such patients but also a reduction to a minimum of the many dangers which we only too well know exist in the single room or smaller dormitory periodically visited.

The third feature, and the one which caused me the greatest thought and greatest difficulty in coming to a conclusion, was that in connection with proper shops, gymnasium and recreation hall. In my travels and visits to other institutions I never failed to notice, in many instances, the very inadequate provision in the buildings for manual arts and crafts training. It has always appeared to me rather peculiar that, in some institutions, even where large sums of money have been spent on the hospitals proper, to see patients engaged at the different trades in quarters so badly ventilated and otherwise so insanitary that I myself felt quite uncomfortable from just passing through. Surely it is a matter of economy for us to supply this class of the best producing patients with every means of proper hygiene just as well during working hours as it is at any other time.

Our shops buildings are fire-proof throughout, all stories having fifteen feet head space, are well lighted on two sides, and are provided with the same artificial ventilation as the hospital proper.

Our amusement or recreation hall is large enough to accommodate and seat one-half the population of the hospital or 900. The gymnasium is large and commodious and when fully equipped should prove a source of pleasure not only to the patients but also to our employees.

Before closing this paper I would like to call your attention to the fact that, in British Columbia, so far at least, politics have never

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entered in any shape or form into the management of the hospital; on the other hand our governments have always shown the strongest disposition to keep this institution without the pale, and have to a remarkable extent carried out suggestions as made by its medical head. At the present time we are blessed in the fact that the executive minister, under whose particular head the management of this institution comes, is a medical man, the Honorable Dr. H. E. Young, who takes an immense interest in the welfare and treatment of the insane of British Columbia.

If any of you come to British Columbia and pay us a visit we will always be glad to see you and show you around our institution, and should you find anything lacking you will know this to be the result of oversights by myself and predecessors.

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INSANITY AMONG THE INDIANS.*

By H. R. HUMMER, M. D., Canton, South Dakota.

At the suggestion of Dr. Henry M. Hurd of Baltimore, Maryland, I shall endeavor to call your attention, through a few short remarks, to the subject of "Insanity Among the Indians," and what is being accomplished for the welfare of this class of unfortunates at the Asylum for Insane Indians at Canton, S. D.

No attempt has been made to prepare a scientific paper, all the remarks herein being of a general nature.

Incidence.—In an Indian population of more than 300,000 in the United States there were at the close of June, 1911, 58 insane Indians in this asylum, 52 applications on file, necessarily unacted upon by reason of our limited capacity, 20 odd cases in various state institutions and more than 20 being cared for by relatives or friends of the more enlightened class. This gives a total of upwards of 150 known cases of insanity, a ratio of 1 in 2000. As a matter of fact, judging from the reports of employes and sane Indians of several of the 140 schools and reservations throughout the United States, there must be at least double this number, or a ratio of 1 in 1000 of the population. For instance, I have been informed that there are from 15 to 20 epileptics on the Flathead Reservation in Montana, the majority of whom present symptoms of mental alienation. Possibly this may be accounted for by the fact that this tribe bind the heads of the infants to make them flat, from which custom they receive their name. Scarcely an employe or an enlightened Indian of any of the reservations visits this asylum who does not inform me that he knows of from one to five cases on that reservation who should properly be in the asylum. Of course, it must be remembered that this is the judgment of laymen, but there must be a good bit of foundation in fact behind this judgment. These cases are not brought to the attention of the various superintendents or physicians, owing to the reticence and superstitions of the Indians, and it is not surprising that the superintendents and physicians do not find them when one considers the enormous territory under their juris-

*Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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diction. Another factor of some importance is the faith of the older full-bloods in their own medicine-men, who treat these cases by incantations, herbs and other means with which I am not familiar. Recently, competency commissions have been appointed by the Indian Office, with a view to visiting the various schools and reservations to determine from an examination of the Indians which ones are competent to receive their lands and become self-supporting citizens. I have read of the findings of one of these commissions, and out of 700 Indians on one particular reservation 350 were found to be competent, 250 incompetent, and 100 were undecided at that time. I cannot convince myself that all of these 250 incompetents are so from ignorance or lack of education alone, but feel forced to believe that a certain percentage are incompetent from idiocy, imbecility, constitutional inferiority, epileptic psychoses, organic brain disease, senile dementia and possibly other forms of mental disease, unrecognized by a commission composed of laymen, in most instances. Judging from some of the medical certificates received it would not be surprising that they would be unrecognized by some of the physicians also. This may be comprehended when one considers that some of these physicians see not more than a dozen cases of insanity in a life time. It is, of course, impossible to foretell the results of these commissions at other schools and agencies, but it is fair to assume that some cases will be found at each. If this be the case, then our estimate of 1 in 1000 may prove too low.

This leads us to the consideration of the various forms of insanity met with in the Indian race. Of the 126 cases admitted from the opening of the asylum to June 30, 1911, the diagnoses appearing in the records show the following types: acute melancholia, chronic melancholia, chronic mania, hypochondriacal melancholia, delusional melancholia, periodic mania, acute mania, circular insanity, climacteric insanity, manic-depressive insanity, congenital epileptic idiocy, chronic epileptic dementia, epilepsy, grand mal, epilepsy, petit mal, syphilitic epilepsy, epilepsy with hemiplegia, cortical epilepsy, traumatic epileptic dementia, epileptic imbecility, epileptic psychoses, dementing, amentia, imbecility, high-grade, congenital imbecility, alcoholic dementia, dypsomania, toxic insanity, acute alcoholic insanity, chronic alcoholic insanity, intoxication psychoses, alcoholic, chronic dementia, terminal de-

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mentia, dementia præcox, hysteric angina pectoris, infantile spastic diplegia, spastic spinal paralysis, kleptomania, nymphomania, mutism, sexual neurasthenia, paresis, galloping paresis and syphilitic dementia. This classification (?) has been revised as accurately as the lack of records would permit, so that at the end of the last fiscal year the records carried nine types, viz., dementia præcox, 15; the epilepsies, 14; congenital imbecility, 8; intoxication psychoses, 6; manic-depressive insanity, 5; senile psychoses, 6; arterio-sclerotic dementia, 2; hysteria, 1; and paranoia, 1. While the records are far from complete or satisfactory, yet the data we have seem to warrant the above-mentioned diagnoses.

The following table will give an idea of the geographical distribution of insanity among the Indians. The 126 admissions were from Arizona, 12; California, 1; North Dakota, 7; South Dakota, 22; District of Columbia, 1; Idaho, 3; Kansas, 3; Minnesota, 16; Montana, 7; Nebraska, 3; Nevada, 2; New Mexico, 8; Oklahoma, 27; Oregon, 3; Washington, 1; Wisconsin, 8; Wyoming, 2.

Of the tribes represented, the Sioux have contributed the largest number, 25, followed closely by the Chippewas with 19. Then in order, we have the Navajo, 8; Apache and Cherokee, 5 each; Menominee, Osage and Piute, 4 each; Bannock, Blackfeet, Choctaw, Creek and Winnebago, 3 each; Arickaree, Caddo, Chickasaw, Flathead, Pima, Pueblo and Seminole, 2 each; and 1 each of the following, Arapaho, Cheyenne, Cree, Crow, Gros Ventres, Hopi, Kickapoo, Klamath, Mesa Grande, Modoc, Moqui, Papago, Pawnee, Piegan, Potawatomi, Puyallup, Quapaw, Sac and Fox, Shawnee, Shoshone, Umatilla, Wyandotte and unknown. It should be remembered that the Sioux and Chippewas are large tribes in the immediate vicinity.

Causation.—The records show 13 cases due to congenital defect, 8 males and 5 females, four of these having epilepsy as a leading causative factor; followed closely by epilepsy with 11 cases, 6 females and 5 males; third in order appears alcohol, which is charged with producing insanity in 6 cases, 4 men and 2 women; senility ranks fourth, being responsible for 5 cases, 3 females and 2 males; arterio-sclerosis is causative in 2 cases, 1 male and 1 female; the puerperium is charged with one and domestic difficulties another. This leaves 16 cases with an unknown

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etiological factor. To account for the insanity in these cases we find heredity, head-injury, constitutional inferiority, prison-life, domestic troubles, menstrual disorders, the climacterium, worry, grief, over-eating, over-medication, fright, exposure, frequent pregnancies and consanguinity in the parents, given as possible factors in the production of the alienation, but in none of these cases is the history sufficiently clear to warrant removing them from the class of unknown etiology. As to heredity, we have one patient, classed as a congenital imbecile, who is the offspring of parents who were brother and sister; a case of manic-depressive insanity, covering a period of 45 years, showing "insanity in father's family" and "peculiarities, intemperance and melancholy in mother's family"; one case of dementia præcox shows a maternal cousin epileptic; a congenital imbecile has the history of a "foolish father"; another is the offspring of a consumptive mother; an epileptic imbecile springs from a syphilitic mother; a precocious dement had "a brother, aunt and an uncle mentally unbalanced"; and a manic-depressive case shows an "eccentric father and an insane grandfather," whether maternal or paternal is unknown. I believe it is clear from the preceding that the histories accompanying the patients are fragmentary, in many instances totally lacking, and in others unreliable. This may be partially explained by the fact that, owing to his superstitions, the Red Man is extremely reticent concerning insanity in his antecedents and relatives, these superstitions being closely akin to the fear of witchcraft, sorcery, etc. There is a case of arteriosclerotic dementia in this asylum, who was absolutely neglected by her relatives following an apoplectic stroke, because another relative, dying of tuberculosis, claimed to have a vision of this woman, just before her death. According to the Indian conception, this vision proved conclusively that our patient was possessed of devils and had poisoned the relative. She would certainly have died from neglect and exposure had it not been for the kindness of a more enlightened neighbor, who took upon herself the care of this unfortunate, her relatives refusing absolutely to go near her. Mr. Gifford, formerly superintendent, in his annual report for 1902, makes the statement that "the condition of the larger number of these patients, mentally and physically, when received into the asylum, indicates extreme neglect in their former care and treat-

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ment. Some of these unfortunate people have no relatives or friends who are responsible, either legally or morally, for their care and support and some Indians are quite superstitious regarding insanity and will have nothing to do with an insane relative or friend, except to get rid of him in the quickest and easiest manner possible." My short experience here convinces me that this statement is not at all exaggerated, except in a few cases, whose relatives have attended the Indian schools sufficiently long to overcome these superstitions. In these cases there is practically no difference between the care given the afflicted Indian and that given his white brethren. It would appear that domestic difficulty is an especially prominent factor in the causation of mental disease in the Indian race. From what I can ascertain, the marriage vows, generally speaking, are not held inviolable, with the result that it is not unusual to hear of children the offspring of father and daughter, brother and sister, and close relations. This may be partially explained by their mode of living, in many instances, all the members of a family living in one tepee, hogan or room, which, when taken with the voracious appetites and indolence of the males, causes the sexual function, rather than muscular action, to assume the position of safety-valve for the system. I am forced to the conclusion that the amount of restraint placed upon the sexual desire is very much less than in the white race. This may be partly due to their ruralization. In this asylum masturbation is practiced to a large extent, in many instances openly, and in practically all without sense of shame. One case of sodomy has been brought to my attention.

So far as sex is concerned, out of 126 cases admitted, 72 were males, a percentage of 57 plus, and 54 females, a percentage of 42 plus.

The relation of the degree of Indian blood as a causative factor may be shown by the fact that out of 126 admissions, 84 were full-bloods, 38 half-bloods, 3 less than half and 1 unknown, giving a percentage of 66⅔ for the full-bloods.

The relation of age as a causative factor is shown by the following table based on 126 admissions. Two in the first decade; 18 in the second; 28 in the third; 36 in the fourth; 15 in the fifth; 10 in the sixth; 7 in the seventh; 7 in the eighth and 3 beyond the eighth decade. I have an old lady of 102 years.

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The relation of the marital condition follows: Of the 58 in the asylum June 30, 1911, 24 were single, 19 married, 11 widowed, 1 divorced and 3 unknown. The lack of records makes it impossible to give these data for all admissions.

Symptomatology.—A few remarks regarding the symptomatology. The manic-depressives present nothing materially different from the whites afflicted with the same disease, as will be recognized from the following abstracts:

CASE 1.—Female, aged 63 at present. Four attacks of maniacal excitement, followed in each instance by an approximately normal condition. At present presents evidences of senility from physical and mental standpoints.

CASE 2.—Four attacks of mixed type. At present presents restlessness, psychomotor hyper-activity, talk compulsion, lack of attention, mild distractibility, impaired critical faculties, capriciousness, impaired memory, somatopsychic ideas, *e. g.*, committed the unpardonable sin, anxiety, fear of impending death, depressing hallucinations of hearing, hypochondriasis, mild ideas of persecution and some emotional depression. Mixed type.

CASE 3.—Third attack. Restless, excitable, voluble, unstable expression, lack of attention, hallucinations of hearing and sight, impaired memory, alternating with hypo-activity, diminished ideo-motor activity, emotional depression, retardation of thought. Alternating type. Condition between previous attacks unknown.

CASE 4.—Previous history unreliable. Present symptoms, psychomotor hypo-activity, diminished ideo-motor activity, movements slow and sluggish, emotional depression, retardation of thought, mild fear of impending death, vague ideas of persecution, auditory hallucinations. Depressed type.

CASE 5.—Proved to be one of hysteria. Discharged recovered.

I have observed no instances of imperative conceptions and the physical symptoms were inconsequential.

The epileptics here differ in no manner from the white epileptics I have seen, except that five out of the 14 have a condition of hemiplegia, three of left side and two of right, the exact relation of the epilepsy and hemiplegia being unknown at this time. One case of epilepsy is purely nocturnal and several others practically nocturnal, though they occasionally suffer a convulsion during the day. One epileptic has his convulsions serially, averaging 18 to 20 every third week and another averages 40 to 50 convulsions monthly, in spite of fairly large doses of the triple bromides.

The congenital imbeciles present nothing startling, except that all are of very low intelligence.

The only striking symptom among our alcoholic cases seems to

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be the active homicidal impulses which were present in each of the six cases, one man having actually killed several persons, another shooting at some strangers passing his farm, another attempting an assault with an ax, a female threatening to kill her family by "chopping off their heads," another by assaulting those around with anything she could lay hands on, and the sixth by vicious assaults without warning at every opportunity. Otherwise, their symptoms did not differ materially from those occurring in the white alcoholics. Five of the six are dementing types and the sixth is a case of chronic alcoholic hallucinosis.

Our senile psychoses present no differences from the corresponding psychoses in the white race.

Our hebephrenics have the same eccentricities, vague suspicions, self-centering, distrustfulness, emotional outbursts of superficial character, occasional self-complacency, lack of initiative, somato-psychic delusions, hallucinations, mostly of an elementary character, apathy, silly smiles, impulsivity, irrelevant replies, negativism, stereotypies of speech and attitude, word salad and automatism. Our catatonics show alternating periods of depression and excitement, stupor, motor disturbances, mutism, negativism, stereotypies of speech and action, cerea flexibilitas, psycho-motor retardation, apathy, lack of interest, embarrassment, impulsivity, destructiveness, hallucinations, delusions and aggressiveness. Our dementia præcox, paranoid form present dementia, fixed systematized delusions of a bizarre nature, fantastic hallucinations, controlling the actions of the patients, defective memory, hypochondriacal ideas, occasional impulsive acts or mannerisms, verbigeration, and automatism.

Our true paranoiac is extremely interesting, having been abroad and demanded that the throne of Denmark be vacated in her favor, and I trust that I shall be able to make a detailed study of her case later.

In general, then, our Indians present practically the same mental symptoms as appear in corresponding forms of mental disease among the whites. They are decidedly more suspicious, at least until their confidence is gained, much more reticent and their superstitions are fully as prominent as those of the plantation darky. They are probably more destructive and decidedly filthier than the white insane. They give little trouble by their attempts to escape, there having been no escape from this insti-

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tution in two and one-half years. There seems little danger of suicide, though I have one case who has made repeated abortive attempts at self-destruction, always by the hanging method.

Diagnosis.—I shall only remark that it is harder to diagnose the condition of the insane Indian because of the reasons previously mentioned, viz., his reticence, suspiciousness, superstitions, etc., and from the fact that oftentimes our only medium of conversation is the sign language, which with us is very crude.

Prognosis.—An idea of the prognosis may be obtained from the fact that out of 126 admissions there have been 41 deaths, 16 recoveries, nine improvements or unimprovements, two escapes and 58 remaining in the asylum June 30, 1911, all of whom are chronically insane.

Twenty-one deaths due to respiratory diseases, 14 tuberculosis and seven pneumonia; eight deaths due to nervous diseases, five epilepsy and three paresis; six deaths due to miscellaneous diseases, three syphilis, two senility, one mastoid disease; four deaths due to digestive diseases, two enteritis, two liver and bile ducts; one death due to circulatory disease, valvular disease, anasarca and ascites; one death due to osseous disease, tuberculosis of bones.

Treatment.—We shall dispense with the treatment in a few words. Custodial care and attention, together with what encouragement and suggestion we can give in our daily contact, regulation of hours for rest, eating, exercise and recreation, careful attention to the diet and as strict an enforcement of the laws of health and sanitation as conditions will permit, constitute the routine measures. The epileptics are given a routine treatment of the triple bromides and what other sedatives are required and indications are met as they arise. Seldom is it necessary to resort to hypnotics, although an occasional hot bath is found to be beneficial. Games of all sorts are encouraged, such as baseball, horseshoes, fishing, trapping, croquet and athletics of all sorts; also such indoor recreation as checkers, cards, dominoes, basket-work, raffia-work, bead-work and fancy sewing. Physical labor for those capable of performing it is aided and abetted to the fullest extent. Trips to town and the near-by river assist in breaking the monotony. Weekly congregations for the singing of sacred music are beneficial.

Historical.—The institution was established more than ten years ago, through the far-sightedness of certain prominent men, including Senator Pettigrew of South Dakota, who succeeded in

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convincing Congress that it would be both wise and humane to establish an asylum for insane Indians, who, prior to that time, received little or no care. The institution consists of 21 buildings, only one of which is occupied by patients, located on a commanding knoll two miles east of Canton, and about one-half mile from the Big Sioux River, which at this point forms the boundary line between Iowa and South Dakota. We have about 100 acres of rich black soil, which furnishes us with an abundance of vegetables in season, all of the potatoes we use throughout the year and supports three horses and seven cows with feed and pasture. One of the most important advances made has been the discontinuance of the surface disposal of sewage, by connecting with the sewer system of Canton. Two years ago an appropriation of $25,000 was secured from Congress for the construction of a hospital building. This amount proved insufficient and $15,000 additional was secured from the present Congress. This building will care for the infirm, the tubercular (in the sun-parlors), the surgical cases and serve as isolation and reception ward for acute cases. Provision has been made for a pathological, bacteriological and chemical laboratory, in miniature, in this building, in connection with a mortuary. The basement will contain a complete hydrotherapeutic outfit.

In addition the superintendent will be furnished a detached residence during the coming summer.

We hope soon to install suitable outdoor playground apparatus, which will add materially to the mental and physical welfare of those able to use it. This apparatus will follow the school-ground type, but will be selected to fit our peculiar needs.

The time is not far distant when it will be necessary to erect one or two cottages for the epileptics and a chapel and amusement hall for the benefit of patients and employes. An employes' home is an urgent necessity.

In a short time our water supply will have to be increased and it will not be long before serious consideration will have to be given the matter of a central power and heating plant.

I hope to be able to visit a number of the different reservations with a view to studying home conditions and in time to develop an elementary text-book for use of physicians in the Indian service.

I thank you for your courtesy and attention.

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OCULAR SYMPTOMS IN GENERAL PARALYSIS OF THE INSANE.*

By HOWARD T. CHILD, M. D.,
Assistant Physician, Kankakee State Hospital, Hospital, Illinois.

The frequency with which physical symptoms present themselves in cases of general paralysis is a marked characteristic of this disease.

The special organ to which this paper will refer is the eye, and since general paralysis is in every case chiefly a brain disease many interesting local symptoms are present.

The initial stages have many morbid changes to be noted. Among the first to be considered is eye movements. In the study of abnormal mental conditions additional difficulties arise from the very object of investigation, in different proportion to its variation from normal.

As a rule the movements of the eye are neither unusual nor difficult. The ability to look at a bright object which appears suddenly within the field of view is one of the earliest forms of motor organization to be achieved, and it is retained long after the ability to learn new and complex forms of reaction is lost. A patient naturally looks at a suddenly appearing object when he could otherwise learn the new reaction only imperfectly and with an enormous waste of time.

While eye movements are associated very closely with the most complex mental activities it is a fact they are in a manner peculiar to themselves inaccessible to subjective observation. Even well trained observers fail by introspection to discover some of the facts of eye movements which are most conspicuous in the photographic records.

Ordinarily in man, eye movements are usually involuntary and unconscious. They are essentially a part of the mechanical preadjustments of vision, and consciousness is concerned with the results rather than with the preadjustments. They may at times be consciously initiated, but once begun they are entirely withdrawn from conscious control. This prevents both arbitrary

* Read before The Kankakee State Hospital Medical Society June 10, 1912.

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modifications and successful simulation of pathological symptoms. Relative uniformity in previous training gives unequaled opportunity for legitimate comparisons between different persons. Probably no other reaction is common to so many different persons in so high a state of development. The nearest state of perfection is reached by the speech functions, but two gross differences exist which render generalization concerning them difficult. These differences are individual habits and training (A. L. Diefendorf).

In the movements of the eye we can assume not only an almost complete identity of practice but a general high degree of efficiency.

A few words as to the technique of recording eye movements. By using the corneal reflection as the registering medium, there is absolutely no discomfort to the patient and no unusual stimulus to excite him, while the real purport of the experiment can be disguised by instruction to the patient to read exposed letters, figures, words, etc., or to have his attention held by his trying to see objects on a black screen in front of him. I have applied the term nystagmic reinforcement to this method of detracting the patient's attention.

Certain variations in ocular movements are to be found. I quote the following classification mentioned by Diefendorf.

1. Variations as to the velocity of eye movements.
2. Variations as to the time reaction of eye movements.
3. Variations as to the pursuit reaction of eye movements.

As applied to cases of dementia paralytica observation shows that in the depressed phases the velocity of eye movements is diminished, while in the euphoric stage the movements are increased. There is an inter-reaction between these automatic movements which have been found to be secondary and the interaction of the higher nervous centers which are primary. Also that the secondary automatic movements increase their velocity when the interaction of the higher centers is lessened. Advanced dementia paralytica has curious fixations breaking the normal movements of the eye at irregular points.

Fatigue acts as a factor in the variations in the velocity of eye movements also.

In regard to time reactions:

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The adequate eye reacts not only in a definite direction but it is also of definite extent. Reaction time is measured from the beginning of the movement. The beginning of an eye movement is really only the initial phase of a movement of definite direction and extent.

The pursuit reaction involves more extensive psychomotor elaboration than any other ocular reaction known. As quoted by Dodge, the true pursuit eye movements are totally different in function and character from the rapid reaction movements of the eyes by which the peripheral objects of interests are fixated. Rapid movements are relatively constant in duration and constitute moments of practical blindness. The reason for this is not known, but it seems to be caused by fatigue of the intrinsic eye muscle.

Of no mean import are the motor changes in the pupil.

Early in the disease these morbid changes are generally temporary, and even if there is not a return to the normal they show by giving place to disturbances of an opposite kind that they may be transitory and independent of any destructive lesions.

Of the most important pupillary changes to be noted during the initial stages of this disease is that of the Argyll Robertson pupil phenomenon. This consists of the preservation of the reaction of the pupil to accommodation but not to light. Very often the pupils respond to the stimulus of light by a reaction which is merely slower and weaker than normal, or they may be absolutely fixed. Tranzie quotes cases where pupil undoubtedly may disappear and reappear in the course of general paralysis as it has been observed to do in tabes dorsalis. A good method of carrying out this examination consists in increasing and diminishing a steady flame in fixed position which the examiner controls by means of a key without making movements that tend to cause alteration of the accommodation.

Ofttimes one finds that the pupils are symmetrical as in normal individuals, but in consequence of a difference in the reactivity, a momentery asymmetry is produced during the examination, as it is noted that with each change in the light one pupil reacts much sooner than the other.

More often the asymmetry of the pupils is permanent, and in these cases there is more or less complete immobility present gen-

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erally in the dilated pupil. Myosis is somewhat frequent in the initial stages of this disease.

During the latter stages of disease mydriasis is more frequent, and it may be found in patients who early in the disease have exhibited a very distinct myosis.

Certain variations have been mentioned, namely, those in which there is an inversion of the pupillary reflex to light whereby diminution of the intensity of the luminous stimulus causes contraction instead of dilatation (Raggi). This may present itself fallaciously when the true reaction is so momentary as to escape observation.

There are varieties in the form of the pupil often seen in cases of general paralysis, for example, oval or polygonal. Ordinarily these are dependent upon that of the sympathetic, which does not apparently take part in the morbid degeneration process.

Myosis, expressive of third nerve hyper-activity, is seen towards the beginning of the disease and in the sthenic cases; or in other words during the irritative stage of general paralysis, while mydriasis which expresses defective motor oculi action is more common in the terminal stages of exhaustion and in cases that run a rapid course. The lesion is usually of three types:

1. The irritative.
2. The paralytic and
3. The destructive.

It is almost always limited to the third cranial nerve which supplies the intrinsic muscles of the eye. The other nuclei may be affected but not so frequently as the third nerve. Siemerling and Boedeher record cases of paralysis of the intrinsic nerves with atrophy of the corresponding nuclei. At the Kankakee State Hospital cases have been noted presenting this phenomenon.

Out of 314 cases examined, Sprengler reports 62 cases in which pupils are equal and of normal size, bilateral myosis in 53 cases, bilateral mydriasis present in 18 cases, unequal pupils in 181 cases.

In 265 cases reaction was:

Normal in 53 cases.
Sluggish in 90 cases.
Absent on one side in 8 cases.
Absent on both sides 112 cases.
Paradoxical 2 cases.

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Personally I have found in 150 cases examined normal reaction in 15 cases.

Sluggish 63 cases.

Absent reaction on one side 2 cases.

Absent reaction on both sides 70.

Of course these examinations were made at various stages of the disease which may account for the abrupt variations in reactions.

Ophthalmoscopic examination of the eye shows edema and congestion of the retina, neuro-retinitis, slight haziness of the optic disk, but not associated with a marked swelling and disturbances of retinal circulation, optic atrophy, which is shown by a pale disk somewhat blue-gray color, absence of retinal vessels on its surface. Associated with this is a contraction of these vessels. Cupping of the optic disk with sloping sides instead of abrupt sides as normally and disk area is contracted to a marked degree. Choroidal infiltration, some pigmentary deposits. At first the optic disk is red, then hazy or opaque and later yellowish-white. Retinal hæmorrhages may occur. Blindness may occur or a quivering of objects called metamorphopsia on which the patient complains.

To summarize we find that certain pupillary changes are found in general paralysis which can be determined upon by careful observation. Among those most prominent are fixed dilated pupils, irregular pupils and the variation in time pursuit and velocity reaction. That certain anatomical changes are also present has an important bearing.

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Notes and Comment.

Mental Healing in Fact and Fiction.—The cure of disease by treatment of the mind has always been an important resource of the physician. Yet so unconscious has he been of his mighty power in this direction as to have been practically unwitting of his weapon. Not until a new school or cult has sprung up under the banner of "psychotherapy," has been revealed a secret carried so long and with so little assumption. But acknowledgment must be made to the disciples of psychotherapy that an idea or plan is crystallized under the magic influence of a resounding title, even though its vogue may be temporary. Dr. Walsh's new and pretentious volume on "Psychotherapy" * will do much to place this therapeutic method in its proper relation to practice. It is complete, exhaustive and well-considered. Dr. Walsh traces mental healing from its apocryphal origin, and cites its earliest historical uses. Among these is the experience of Erasistratos with the son of Seleukos: "While Erasistratos was feeling his patient's pulse, the stepmother of the young prince entered the room. She, the second wife of his father, was young and handsome, and Erasistratos noted that there was great perturbation of the pulse as soon as the stepmother came in. He correctly surmised that the young man was in love with the lady and that his illness had been occasioned by the feeling that his love was helpless."

Charles Reade has utilized this principle in one of the experiences of Margaret, a heroine said to rank with Juliet and Romola as the three greatest feminine creations of fiction. In penury and stress Margaret assisted her aged father, a physician, with sublime loyalty, and in their wanderings, came upon the invalid daughter

* *Psychotherapy,* including the history of the use of mental influence, directly and indirectly, in healing, and the principles for the application of energies derived from the mind to the treatment of disease. By James J. Walsh, M. D., Ph. D., Dean and professor of functional nervous diseases and of the history of medicine at Fordham University School of Medicine. New York and London, D. Appleton & Company, 1912.

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of the Mayor of Rotterdam, whom all "the learnedst leeches" had seen, and "bettered her naught." "One skilled wight saith spleen; another, liver; another, blood; another, stomach; and another, that she is possessed; and in very truth, she seemeth to have a demon; shunneth all company; pineth alone; eateth no more victuals than might diet a sparrow. Speaketh seldom, nor hearkens them that speak, and weareth thinner and paler and nearer and nearer the grave, well-a-day."

"Sir," said Margaret, "an' if you take your velvet doublet to half-a-dozen of shops in Rotterdam and speer is this fine or sorry velvet, and worth how much the ell, those six traders will eye and feel it, and all be in one story to a letter. And why? Because they know their trade. And your leeches are all in different stories. Why? Because they know not their trade. I have heard my father say each is enamored of some one evil, and seeth it with his bat's eyne in every patient. Had they stayed at home, and ne'er seen your daughter, they had answered all the same, spleen, blood, stomach, lungs, liver, lunacy, or, as they call it, possession. Let me see her. We are of a sex and that is much."

So, "Doctor" Margaret saw the patient, and after a few preliminary questions told her a love story. On another visit she keenly watched what topics interested her, and found there was but one. Margaret prevailed upon the mayor to pay all his people their salaries in his daughter's presence and hers.

"Sir, how call you yon black-haired lad?"

"That is Ulrich, my clerk."

"Well then, 'tis he."

"Now Heaven forbid! a lad I took out of the streets."

"I held her hand, and with my finger did lightly touch her wrist; and when the others came and went, 'twas as if dogs and cats had fared in and out. But at this Ulrich's coming her pulse did leap, and her eyes shine; and when he went, she did sink back and sigh; and 'twas to be seen the sun had gone out of the room for her."

It is almost needless to add that the worthy burgomaster was forced to capitulate, and that the fair physician was no less successful in treatment than in diagnosis.

Perhaps the author had read of Erasistratos and the prince. More probably he was a keen observer of human nature, not witless of passing events. Alienist physicians, who are, of all, best

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acquainted with the intimate relation of mental and bodily processes, accept the fact of history and the fabrication of romance, but they may hesitate to erect an eidolon of "Psychotherapy" as the supreme power of the healing art. It is too heedless of modern advance and sends us scuttling back to the days of the Asclepiadæ.

M.

PATIENTS WITH SYMPTOMS OF INSANITY WHO ARE NOT INSANE.—In the Tenth Annual Report of "Pavilion F." of the Albany Hospital the attending physician Dr. J. Montgomery Mosher with his accustomed vigor discusses the condition of a large class of patients coming to the hospital for treatment and presents his views as to the nature of the diseased condition from which they apparently suffer. He generalizes from the experience he has had with nearly twenty-five hundred patients during the past ten years and declares that experience has shown in their study the gradual evolution of the working hypothesis that while they presented symptoms of insanity they were not actually insane. Observation of these patients has convinced him that there is no dividing line between delirium and insanity and that a prompt, definite conclusion may not be reached as to whether an individual patient is to be placed in one class or the other. In fact he believes that many, perhaps the majority, of these patients represent an intermediate group in which symptoms of delirium are mingled with those of insanity in such combination as to leave doubt of the predominating element. Although these patients present symptoms of insanity, they are not necessarily insane. He finds it difficult to attach an appropriate name to the condition, but prefers not to call it one of insanity. He believes that the symptomatic classification of mental states is unsatisfactory because there is absolutely no reason why one person should be excited or another depressed. The common factor in the disease of each is an alteration of personality. Attempts to classify the insane according to their personality and to look behind the symptoms to individuals are equally difficult. It might be better to speculate "why one man is a Republican and another a Democrat, or why one boy becomes a merchant and another a priest." The effect of such theoretical inquiries has been to assume an intrinsic defect of the original organization and to lead the physician to anticipate future

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attacks. This unfavorable prognosis is not justified in many cases because they do not have recurring attacks. They get well and remain so. He adds:

When the first year's work was completed, it became necessary to present a statistical summary, and tables, then generally accepted by alienist physicians, were adopted. The phrases "primary dementia," "confusional insanity," "melancholia," "mania" and "acute delirium," were placed in a group which was to include all cases who presented prospect of recovery. By "primary dementia" was understood a condition of apathy and torpor of varying degree; by "confusional insanity" (a more euphonious phase than "hallucinatory confusion"), a state of confusion with disturbances of the special senses, and moderate defect of consciousness; by "mania," mental and motor activity, restlessness and excitement; by "melancholia," depression of spirit; and by "acute delirium," a state of extreme physical prostration with involuntary and excessive activity of the muscles, hallucinations of the special senses and obliterations of consciousness. It was soon determined that these were not different diseases, but different manifestations of the same disease, or condition, whatever it might be, and that it was difficult in some cases to decide which designation should be used. It is quite apparent now that all of these patients are cases of exhaustion, associated with perverted mental action, in which the abnormal mental state is represented by stupor, confusion, excitement, depression or delirium, or some combination of these. One manifestation is common to all: physical prostration. They are really cases of acute physical disease with exaggerated or prominent mental symptoms. The mental symptoms are the manifestation of perverted action of the brain, due to abnormal conditions of circulation and nutrition of that organ. Strictly speaking this is not insanity. The disorder occurs in many persons of excellent personal and family antecedents. It is not necessarily due to dissipation or other vicious habits; on the contrary it follows too often hardships and privation which excite compassion rather than criticism. The common struggles of life are often too severe. The father whose limited income is insufficient, and the mother whose wearying toil surpasses endurance are brought to the hospital emaciated, prostrated, and in states of collapse and delirium, resulting from inordinate expenditure of strength, insufficient food and rest. Nor is a disaster of this kind limited to adult life. The psychology of adolescence is one of the most important problems to be met by parents, educators and neurologists. A surprising number of patients between the ages of fifteen and twenty-five have been received in deplorable condition, the more to be regretted as occurring when life should be brightest and happiest and most alluring. The fortunate may contemplate with pity the man or woman whose youthful days have been spent in sickness and misery, who has never had the enjoyment that comes without responsibility.

Adolescence is the preparatory period when the young man or woman is emancipated from the control and guidance of parents to meet strangers

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in the rivalry and competition which constitute the so-called "struggle for existence." The child who has had all problems solved without personal concern, and whose tendencies, temperament and desires have been controlled and directed, is confronted by conditions entirely novel. Whether in professional or commercial life he meets others whose outlook, tastes and viewpoint are different, and he is obliged to adjust himself to a new environment, often changing with kaleidoscopic quickness. Physically and mentally he is to some extent prepared by excessive vitality. The bodily functions react quickly and vigorously, appetite and nutrition are sustained and sleep is refreshing. The energy and recuperative power of youth are proverbial. Two qualities only are wanting—experience and discretion, and upon the lack of these disaster too frequently follows. The immediate causes are not always apparent, though overstudy and overwork are occasionally alleged. In many cases thorough inquiry leaves only the supposition that there has been a failure of adjustment to new conditions, that rapid growth has resulted in want of balance. The nervous disorders of youth do not always require hospital treatment. Hysteria, chorea, convulsions and other conditions included under the general term "nervousness" are common in general medical practice. Mental functions are involved in greater or less degree, and at times are dominating. Then the patient seeks relief in the hospital. The symptoms vary, but group themselves in two classes, in one of which excitement prevails, in another, stupor. In the former group there are great restlessness and incoordinated activities, for which the time-honored term "mania" may be used. This may reach a high grade, with disturbances of the special senses and partial or complete obliteration of consciousness, constituting actual delirium. The cases of stupor are profoundly lethargic, silent, inactive and inclined to resist care. They move about automatically. Occasionally there are combinations of all forms, with sudden impulsive and even dangerous acts.

The study of these adolescent cases has had great impetus in recent years by the importation from Germany of the term "dementia præcox," a raucous phase and difficult of interpretation. It carries with it the assumption of incurability, which has been shown to be unwarranted, as many patients have recovered health and have remained well. Our experience justifies the faith that the prospect for recovery is good in all patients who do not present congenital defect or pronounced hereditary taint. Treatment in the hospital represents an incident in the career of the patient, in which active symptoms called for the resources of an institution, and our patients have returned home, with a warning to the parents and with instruction as to conservation of health and restraint of endeavor. They have learned by the event that understanding of the mental and physical resources is essential to the conduct of business, indulgence in recreation and the successful ordering of life. The fact that these patients recover health indicates that the disease might have been prevented. The training of children, however, requires knowledge, discernment and impartiality not universally possessed by parents, and the severe lesson must be had.

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We thus become more and more reluctant to use the word insanity with its unpleasant insignificance. We would not say that certain cases of insanity are restored, but that there is a group of cases of physical exhaustion with prominent mental symptoms for whom recovery is to be expected. The mental state may be described as modified delirium or analogous with delirium, and should carry no unpleasant imputation. The patients require hospital treatment and the duty of the hospital is clear. Such patients should be received without question or formality, and placed under restorative measures until, beyond any question, it is determined that the affection is permanent and the mind destroyed. Then the question of insanity may be discussed.

THE VERDICT IN THE CASE OF JOHN SCHRANK.—It will be remembered that Ex-President Roosevelt was shot, but not seriously injured, on the evening of October 14 last, in the city of Milwaukee.

His assailant, John Schrank, it was shown, had followed Mr. Roosevelt about the country seeking a favorable opportunity to shoot him. On the evening of October 14 last, just as Mr. Roosevelt was about to leave his hotel in an automobile to go to a political meeting where he was to deliver an address, Schrank, standing in a crowd which had collected in front of the hotel, and within a few feet of the automobile in which the Ex-President was, fired a pistol at him. The bullet embedded itself in the muscles and tissues of the chest wall, after passing in an upward and inward direction for about four inches from the point of entrance, which was one inch below and one inch to the right of the right nipple.

We are under obligations to Dr. Richard Dewey, of Wauwatosa, Wisconsin, chairman of the commission appointed to examine Schrank, for an opportunity to read the report of the examination, and also the various written statements of Schrank. Did space permit, the documents in the case as well as the report would be published.

Judge A. C. Backus, of the Municipal Court of Milwaukee, before whom Schrank was brought, appointed a commission of five alienists to examine Schrank and determine his mental state.

On November 23 the commission reported to Judge Backus that the unanimous opinion of its members was that Schrank was insane.

The questions on which the commissioners were instructed to

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report were: 1. Is the defendant at the *present time* insane? 2. Is the defendant in such condition of mind that he is able to advise with counsel and conduct his defense?

It will be remembered that Schrank, when arrested, expressed the belief that Colonel Roosevelt had guilty knowledge of President McKinley's death and that "*a man who wanted a third term had no right to live.*" His examination developed the fact that a whole body of systematized delusions had grown up in his mind about "sacred traditions" that must be defended with life if need be, and that Colonel Roosevelt, like Caesar, was ambitious and deserving of Caesar's fate.

The summary and conclusions of the commissioners are as follows:

Summary.—We have limited the scope of our investigation and inquiry to the questions we have been asked to determine and summarize briefly: John Schrank, aged 36 years, single, bar-keeper and saloon-keeper, and of limited educational opportunities, with insane heredity, was born in Bavaria, March 5, 1876, and came to this country twelve years later. Apparently he developed normally, but early in life showed a particular fondness for the study of the histories of this and other countries, and also for the composition of poetry. In the course of his studies of history, and especially of the constitution of the United States and of Washington's Farewell Address, he developed the belief that this republic is based on the foundation of four unwritten laws, to which he also refers as the "Four Sacred Traditions." . . .

In 1901 he had a very vivid dream, which at that time he recognized as only a dream [of seeing McKinley in his coffin point to a person as his slayer who wore the aspect of Roosevelt], the memory of which has frequently recurred to him ever since. In the course of the pre-convention campaign [in 1912] the belief that the four unwritten laws of the "Four Sacred Traditions" are in danger comes to him, and later, on the nomination of a presidential candidate by the Progressive Party, he begins to attach particular significance to the dream he had in 1901. He meditates deeply on this and, in the course of a few weeks, there appears to him a "vision" accompanied by a voice which, in effect, commands the killing of the man through whose acts and machinations he believes the sacred traditions to be endangered, and who he also believes is, through a conspiracy, concerned in the assassination of a former president. He continues to ponder on the subjects set forth, awaiting the appearance of a person who would carry out the act suggested by the vision, but shortly arrives at the conclusion that he, and not someone else, is the chosen instrument. He at once sets forth to accomplish his mission, following his victim until he finally comes up with him.

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During his examination as to his sanity, he conducts himself in perfect accord with his beliefs, and expresses a regret at not having died at the hands of the mob if such a result would have proved a benefit to his chosen country.

Conclusions.—1. John Shrank is suffering from insane delusions, grandiose in character, and of the systematized variety.

2. In our opinion he is insane at the present time.

3. On account of the connection existing between his delusions and the act with which he stands charged, we are of the opinion that he is unable to confer intelligently with counsel or to conduct his defense.

RICHARD DEWEY, M. D., Chairman.
W. F. BECKER, M. D.,
FRANK STUDLEY, M. D.,
D. W. HARRINGTON, M. D.,
WILLIAM F. WEGGE, M. D.,
Commissioners.

In accordance with the finding of the commission, Judge Backus has ordered the commitment of Schrank to the Northern State Hospital for the Insane, near Oshkosh, Wis., and he was taken to the institution November 25.

The *Journal of the American Medical Association*, in commenting upon the case (December 7, 1912, p. 2071), says:

The entire procedure is in gratifying contrast to some of our "celebrated" murder trials and is an unanswerable reply to the argument that such spectacles are necessary to protect individual rights or are unavoidable under our laws. Judge A. C. Backus, the trial judge, deserves the approbation of all good citizens, and especially of all practitioners of medicine and law, since it is on these two professions that the scandal and disgrace of the abuses of expert testimony have fallen most heavily.

On account of the interest shown in the case, some information regarding the Wisconsin law would not be amiss. Judge Backus' action was taken under Section 4700 of the revised statutes of Wisconsin. This law was enacted in 1898, and in view of its satisfactory provisions, it is surprising that it has not been used heretofore by Wisconsin judges. Apparently Judge Backus is the first to apply it. This section reads: "When any person is indicted or informed against . . . if the court shall be informed in any manner that there is a probability that such accused person is at the time of his trial insane, and thereby incapacitated to act for himself, the court shall in a summary manner make inquisition thereof by a jury or otherwise, as it deems most proper, and if it shall be thereby determined that such accused person is so insane, his trial for such offense shall be postponed indefinitely and the court shall thereupon order that he be confined in one of the state hospitals for the insane."

A law was also enacted in 1911 (Chapter 221, Session Laws), providing

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that, even in case the accused is found insane at the time of trial and sent to an asylum, if he subsequently recovers and is returned for trial on the original charge, the presumption of sanity at the time the offense was committed shall prevail, unless a reasonable doubt of his sanity is raised in the minds of the jury. In the Schrank case the proof of guilt was absolute, and the only possible defense was insanity.

It should be noted that the inquiry regarding Schrank's sanity was not a part of his trial for attempt to kill, or in any way a substitute therefor. Schrank has been declared insane by the court, and ordered confined to an asylum. He is still in the custody of the court and cannot be released except by order of the court, and then only if he is found sane, in which case he will be brought back to the court for trial for his offense, for which he is still amenable to punishment. This plan avoids putting lunatics on trial on criminal charges, as the inquiry precedes the criminal trial. It also prevents the possibility of a short confinement in an asylum being substituted for a severer punishment, as has too often occurred. If Harry Thaw were adjudged sane, he would be a free man. If Schrank is at any time declared sane, he will still have to answer for his crime. We repeat, Wisconsin is to be congratulated on having such a law and such a judge.

ANNUAL MEETING OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—We have received the following announcement from the Secretary of the Association:

The next annual meeting of the American Medico-Psychological Association will occur at the Clifton Hotel, Niagara Falls, in Canada, June 10-13, 1913.

The Clifton is a splendid hotel located in a superb park on one of the most imposing sites in the world. Its spacious verandas command a vista of surpassing beauty and grandeur. Directly in front, beyond the undulating lawns dotted with trees and shrubs, is the wonderful Horseshoe Falls behind its cloud of mist, and just beyond to the eastward, the American Falls and the gorge of Niagara, hewn through the solid rock by countless ages of rushing torrents.

The Clifton Hotel management offers special and attractive inducements to the members of our Association and their friends, which will be given in detail in a later announcement. For the present it is sufficient to say that spacious accomodations are promised for the general sessions of our meeting and for all committees.

Arrangements are now being made for what we believe will be an exceedingly interesting programme, and it is hoped that every member of the Association will include our meeting and the wonders of Niagara in his plans for next June.

CHARLES G. WAGNER, *Secretary.*

BINGHAMTON, N. Y., October 1, 1912.

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Book Reviews.

Practical Physiological Chemistry. A book designed for use in courses in practical physiological chemistry in schools of medicine and science. By PHILIP B. HAWK, M. S., Ph. D., Professor of Physiological Chemistry and Toxicology in the Jefferson Medical College of Philadelphia. Fourth edition revised and enlarged. (*Philadelphia: P. Blakiston's Son & Co., 1912.*)

This volume of four hundred and fifty odd pages bridges the gap existing between physiological chemistry as taught in the chemical laboratory and in the courses of instruction in clinical medicine. Methods are given for the determination of the various substances found in the body fluids and tissues without, which would be in a book of this character undesirable, reference to the pathological conditions associated with such substances which may be varied. The prevailing scheme of presentation is a general introduction to and appropriate discussion of each main subject, following which comes a section of detailed directions for laboratory experimentation. The illustrations are of the character usually met with in this type of book.

The subject of the proteins and their relations to those various processes through which they are rendered available to the human economy has been well presented considering the difficulty attached to this phase of physiological chemistry. In the chapter on blood and lymph considerable space is devoted to histological considerations not properly a part of physiological chemistry. The chapter on nervous tissue might to great advantage be augmented by more information concerning the group of lipins, a class of substances which recent research reveals to be of the greatest importance in the metabolic processes of the central nervous system. On page 269, the great importance of the detection of choline in the cerebrospinal fluid in certain cases of degenerative diseases of the nervous system has not been substantiated by more recent research. The increase of choline in cerebrospinal fluid under any conditions in more than negligible quantities has not been conclusively demonstrated. In connection with the nervous tissue more of the chemistry of the cerebrospinal fluid itself might be advantageously included since a more intimate knowledge than formerly of this fluid is now demanded of all medical students and practitioners. A full account of both quantitative and qualitative methods of urinary examination is given, and the author has accomplished well the task of keeping abreast of new methods. The volume is concluded by a brief appendix on solutions, reagents, etc., and a copious index. Aside from a few typographical errors, the physical make-up of the volume is well cared for and the book should well serve the purpose for which the author intended it.

BARNES.

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Manisch-Depressives und Periodisches Irresein als erscheinungform der Katatonie. Eine Monographie von DR. MED. MAURYCY URSTEIN, Warschau. (*Berlin und Wien: Verlag, Urban & Schwarzenberg.*)

Urstein's book consists of 659 pages and includes the records of 30 cases which were observed in the hospital Schweizerhof in Zehlendorf. Some of the patients were admitted to that institution in 1867, 1874, 1876, and others later. The patients were studied by many observers, and apparently Urstein had only to do with the interpretation of the clinical pictures. The fact that the clinical histories were poorly recorded *cannot be doubted.* In reading over the case records, one feels that only a superficial observation of the symptoms was made, and without any attempt to analyze the patients' subjectivity, the latter so important in understanding functional psychoses. The whole material is a heterogeneous undigested psychiatric mass. and, indeed, upon such feeble documentary evidence the author desires to upset the teachings of the Munich school, and revolutionize modern psychiatry.

In brief, the author's thesis is as follows:

He identifies katatonia with dementia præcox, and prefers to use the former because there are many cases which, in spite of long duration of the disease, present no evidences of emotional or intellectual deterioration; nevertheless, there was no difficulty to demonstrate symptoms which the author recognized as katatonic. Again, he knows of psychoses occurring in the fourth decenium or still later, that developed typical katatonic terminal states. *He emphasizes that dementia præcox may begin with periodic attacks, which may simulate manic-depressive insanity; that the patient may recover, but later katatonic manifestations are displayed, and finally dementia ensues.* These lucid intervals may be of long duration—sometimes over 30 years—later the attacks may recur; ten or twelve, and ultimately dementia sets in. In katatonic states, depression, mania, hypomania, and mixed conditions are frequently observed. Convulsions may occur, and in 3½ per cent of his cases such symptoms were noted. However, his clinical records are not at all convincing that the cases really belonged to the group of dementia præcox. The author is of the opinion that dementia præcox is not an organic disease, but is probably due to anaphylactic auto-intoxication, resulting from abnormal functions of the genital organs.

Urstein believes that errors in diagnosis of katatonia are frequently made; he holds that this disease can be recognized in its early stages by one particular symptom, intrapsychic ataxia, to which Stransky referred many years ago. In the present state of our knowledge of psychopathology, it is very difficult to conceive how a mental infirmity can be recognized by one symptom alone. It is generally conceded that a psychiatric diagnosis must be made upon the personality of the individual, the development of the disease, the settling of symptoms with their underlying mechanism and the clinical course of the disease picture. It would be a very easy matter if we were in a position to label psychoses by one particular sign

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without taking into consideration the individual psychology of the patient. Who does not know that psychoses may recover and still not be of the manic-depressive group; or functional mental diseases may pass into dementia and not be classified with schizophrenia? Again, it is well known that there are clinical pictures in which a remission of symptoms may be noted for a number of years, and later mental deterioration may set in, nevertheless showing no relation to manic-depressive insanity or dementia præcox. The trained observer in psychiatry encounters such types of psychoses, and he fully realizes the limitation of the psychiatric classification. If we were to force our disease pictures into certain groups without careful analysis of the symptoms, psychiatry would make no progress.

The reviewer does not wish to be too severe on the author, but he feels that his argument is erroneous, and, furthermore, the clinical material is not strong enough to prove his thesis. The book cannot be recommended to the beginner in psychiatry for it would make rather unwholesome intellectural pabulum; and unquestionably the advanced student in psychiatry will find his time more profitable in perusing books of more timely import.

M. J. KARPAS, M. D.

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DIFFUSE GLIOMA OF THE PIA MATER.*

BY ALBERT M. BARRETT, M. D.,

Professor of Nervous Diseases and Psychiatry in the University of Michigan and Director of the State Psychopathic Hospital.

In rare instances it has been observed that the leptomeninges of the central nervous system may be diffusely invaded by glia cells. In all such there has been present a gliomatous tumor of the substance of the brain or more frequently of the spinal cord. The Infrequency of such tumors of the membranes and the diverging views which are held as to the mode of spread of diffuse tumors of the pia mater makes their report a matter of special interest.

It has recently been possible for us to study the distribution and mode of spread of such a tumor which showed an unusually widespread distribution in the membranes of the central nervous system and in a very unusual way formed metastases within the substance of the brain at a remote distance from the primary tumor.

The material came from a patient who had been under treatment in the Traverse City State Hospital, and was from a man who had died there at the age of 40. His condition does not seem to have attracted attention until March, 1910, when various mental abnormalities developed which brought about his commitment to the State Hospital for the Insane in the following June. He then showed little interest in his environment or his personal care. His mood at times was depressed and he expressed delusions of suspicion and persecution. He was physically weak and extremely apprehensive. Sleep was only obtained with heavy doses of sedatives. He soon became unable to comprehend questions and was

* This paper forms contribution number eight of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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completely disoriented. At times he twitched and jerked. The heart's action was weak and irregular. He continued restless until his death about four months after the onset of the clinical symptoms.

The examination of the brain was made after several weeks' preservation in 10 per cent formaline. The dura mater showed no gross pathological changes. The pia mater of the entire brain showed varying degrees of opacity and thickening. This was most marked at the base of the brain, especially below the cisterna interpeduncularis, the pons and the inferior surface of the cerebellum.

Over the convexity the pia was turbid and thickened above the lower part of the fissure of Sylvius and somewhat less so over the frontal, central and first temporal convolutions. The pia over the occipital regions was clear except for narrow gray streaks which bordered the vessels passing over the sulci.

Where most marked the changes gave the pia a gelatinous appearance, and in places the underlying brain substance was completely obscured. In some respects the gross appearance suggested a purulent exudate.

Longitudinal sections through the brain showed that the pia over the lateral occipital margin was not perceptibly thickened but elsewhere along the margin of the hemispheres the thickness varied considerably. Along the mesial margin of the frontal lobes the thickness was from 1-2 mm. and in places over the Island of Reil exceeded 3 mm. The thickening was especially marked in the tela choroidea of the third ventricle.

The vascular trunks at the base were unchanged excepting for a small patch of sclerosis in the basilar artery. The olfactory bulbs were much obscured by the thickened pia and in varying degrees this thickening was present around the portions of the cranial nerves which were still attached to the brain.

The pons was encircled by a sheath of pia at least 2 mm. in thickness. The hemisphere showed slight bulging of the convolutions of the right occipito-temporal region.

In the white substance of the right occipito-temporal region lay a large tumor mass. In a plane passing through the middle depth of the thalami the surface area of the tumor measured 4 cm. in antero-posterior diameter and 3.8 in transverse diameter. Its anterior border was 1 cm. posterior to the calcarine fissure. The

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cavity of the posterior horn of the right lateral ventricle was completely obliterated by the mass. (Fig. 1.)

The color of the cut surface of the tumor in its hardened condition was grayish, with a pinkish hue in portions. Its structure was rather loose and granular in its outer part and more compact in its inner two-thirds. Excepting for a small firm portion near the corpus callosum, its consistency was soft. Its limitations from the surrounding brain substance were not sharply defined. The ependyma of the anterior and posterior horns of the lateral ventricles was finely granular.

A cross-section through the pons in the plane of the posterior corpora quadrigemina showed the pia greatly thickened and a small wedge-shaped focus of softened brain substance, yellowish red in color, which lay within the substance of the right quadrigeminal body. This had a depth of about 7 mm. and a width of 4 mm.

The spinal cord was not available for study, but the pia of the upper few centimeters that were attached to the brain was thickened and opaque.

Microscopic examination of the tumor in the right occipitotemporal region showed it to be a glioma. Its structure was not uniform, for in certain parts fibers predominated, in others the tissue was œdematous and in some places necrotic.

Its margin towards the brain substance was not sharply circumscribed. Glia cells and fibers lay close against nervous tissue, healthy in appearance, excepting for scattered glia cells which had pushed in along the vessels or coarser glia septa. Between the tumor and the brain substance there was no connective tissue or zone of softening.

The specific cells of the tumor showed a considerable variety of forms but all had the characteristics of glia cells. These were largely oval or polygonal in outline and where fibers were most numerous spindle-shaped cells predominated. They varied much in size, some exceeded 85 micra. in diameter. Cells with several nuclei, sometimes as many as seven, were not uncommon. A few showed mitoses. Many cells which had undergone degenerative changes lay scattered through the looser parts of the tumor. Such cells were usually of larger size, often they were highly vacuolated and showed peculiarities in staining qualities.

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All through the area of the section were fibers which showed the staining qualities of glia fibers by differential methods. They were most numerous in the more compact parts of the tumor, adjacent to the brain substance.

The tumor was in close proximity to the ventricle ependyma, and in places had broken through and grew free in the ventricle cavity. Where the line of cells was broken through, cells which showed the characteristics of ependymal cells lay scattered among the tumor cells.

In one place there was a continuous ring of ependymal cells, enclosing a cavity containing a finely granular material. This lay near the line of ependymal cells which marked the wall of the ventricle but was entirely cut off from it by the cells and fibers of the tumor.

The tumor was highly vascular. Many of the vessels had numerous glia cells in the spaces of the adventitia, and the same type of cells were more or less numerous in the walls of vessels which passed through the brain substance well outside of the margin of the tumor. In the less compact portion of the tumor were wide spaces, formed from a coarse stroma of connective tissue containing many vessels which lay singly or in clusters. There seemed to be a marked hyperplasia of the perivascular connective tissue. It could not be accurately determined whether this portion was a vascular structure which had become invaded by the tumor or vessels which had proliferated in the tumor itself. This particular region included the ventricular portion of the tumor and it may have included part of the choroid plexus at the meeting point of the posterior and inferior horns. Glia cells were more loosely scattered in among these wide spaces and degenerated forms were common. A large vein which passed through the subependymal region showed dense infiltration of its adventitia with cells which corresponded in characteristics to those of the tumor. (Fig. 2.)

Parts of the tumor showed degenerative changes. These were smaller and larger areas in the less compact portions of the tumor, in which the cells were loosely crowded together, the nuclei stained poorly, and the bodies of the cells were coarsely granular. In other parts of the tumor there were small cysts with finely granular contents and areas in which there was much fibrin.

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In the looser parts of the tumor were patches in which glia fibers were densely massed. Among these were glia cells resembling more those normally seen in the subependymal regions, and showed fewer of the forms with large bodies, which elsewhere in the tumor were so numerous.

The chief interest in this case centers around the changes in the pia mater. Histologic studies were made from the cortex and its overlying pia in a variety of regions, which showed differences in the extent of the infiltration. All regions of the hemispheres showed some pial infiltration. The minimal amount of this was over the superior surface of both first frontal convolutions, and the maximal was in the pia of the first part of the Sylvian fissure, the layer of pia lying between the cerebellum and pons, and that over the inferior surface of the cerebellum. In some places the pia measured 3 mm. in thickness. (Fig. 3.) Over the hemispheres it was largest in amount near large blood vessels and over sulci. It usually followed the pia to the depth of the sulcus. Where the infiltration was not too dense it was observed that it diminished in amount, thinning out over the convolutions away from the sulcal blood vessels. Extensions of the infiltration followed the blood vessels into the cortex and where the pia had pulled away from the cortex, conical tufts of adherent cells remained connected with the pia.

The infiltrating cells lay in the pia and where large in amounts, in the subarachnoid space. The infiltration was most dense in the deeper layer of the pia. Only when the amount was unusually large did the arachnoid itself appear to be infiltrated. In most places the arachnoid showed no infiltrating cells although the pia underlying contained a considerable amount. The infiltration was composed chiefly of two types of cells. The most numerous were identical in form and other characteristics with cells which made up the greater part of the tumor in the brain substance. The other type were small round forms, either like nuclei with little or no bordering cytoplasm and closely resembled lymphocytes in their general appearances. These forms were most numerous where the amount of infiltration was least. Whether or not they were glia cells or lymphocytes which originated from the chronic irritative process that was present in the membranes was not determined. These cells were not unlike certain types of glia cells met with in gliomata of embryonal origin.

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The most abundant type were without doubt glia cells, in spite of a large variation in form and size. Where most tightly compressed, as where the infiltrating elements appeared to be pushing out into uninvaded regions of pia, they were largely spindle-shaped. Elsewhere they were oval, rounded, or polygonal forms with a cell body composed of a relatively large amount of finely granular cytoplasm, and one or two nuclei placed near one edge of the cell. A few cells, usually of large size, had in their cytoplasm small clear spaces not unlike vacuoles. The glia cells lay closely packed together, often intermingled with shreds of tissue which gave the reactions of connective tissue, evidently from torn septa of the pia mater. No glia fibers were demonstrable. The marginal glia of the underlying cortex was greatly increased in amount and large progressive types of glia cells were conspicuous through the upper strata of the cortex.

It was not uncommon to find epithelioid cells scattered in few numbers among the other cells; usually these were near large blood vessels. In a few places, where the infiltration was large in amount, as between the cerebellum and pons there were epithelioid cells with pigment inclusions, marking the location of old hæmorrhages.

There were found a few small areas in the pial infiltration in which the cells stained less strongly. The area was more loosely formed and had the appearance of necrotic changes.

The walls of the blood vessels of the pia mater showed varying degrees of invasion by tumor cells. It was common, where there was any considerable amount of infiltration of the pia, to find glia cells lying among the fibers of the adventitia of arteries, usually in the outer part and never reaching the media. Where there was little infiltration of the pia the walls of the vessels were free from invading clls. Some large arteries such as branches of the Sylvian artery, even where they were surrounded by dense infiltration, showed no cells in the adventitia, possibly due to the greater compactness of the outer coat of the vessel.

The walls of the veins were much more invaded than the arteries. In many instances glia cells had spread among the fibers almost to the endothelial lining of the vessel. In some instances it was very difficult to demonstrate any wall of a vein, the blood lying almost as if in a sinus passing among the infiltrated pial spaces.

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The infiltrating cells followed the blood vessels into the brain substance. In almost any region where there was any considerable amount of infiltration of the pia the blood vessels in the upper strata of the cortex showed varying numbers of glia cells in their walls. In cross-sections they formed concentric layers of cells outside of the elastica, considerably widening the vessel area. The amount of the infiltration was relatively proportional to the number of cells present in the overlying pia mater.

When the pia was separated from the cortex, short plugs or tufts of cells projected from the inner surface of the pia, showing where vessels and infiltration had been pulled out from the brain substance.

The tumor cells all lay among the adventitial fibers, or in the Virchow-Robin lymph space. In a number of instances the cells had broken out from the adventitia, and lay around the vessel, but there was no evidence to show that they were lying in a preformed space.

In one place the relation of this infiltration to the adventitia was well shown in a vessel in which the fibers of the adventitia had been almost completely pulled away from the media by an unusual amount of infiltration. A circular outline of the structure was preserved, but the remaining part of the vessel was pushed to the outside of the area. (Fig. 4.)

In the pons there was found a similar condition but the cells had broken through the wall and had spread out among the surrounding nervous elements and formed a new focus of tumor growth. (Fig. 5.)

In two places there was a direct invasion of the nervous substance by the cells of the pial infiltration. In one of these there was a very dense infiltration of the pia of the cerebellum and from this, rows of cells pushed in a broad area down to the granule layer. In this region there was an hæmorrhagic extravasation, and numerous blood cells and epithelioid cells with inclusions of hæmatogenous pigments, mingled with tumor cells in the cerebellar tissue.

The other instance of direct invasion was in the cerebello-pontine region where the dense infiltration of the pia was continuous with a broad area in which tumor cells had spread through the pontine substance.

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The ependyma lining the ventricles showed in a few places ependymal granulations but no deposits of cells of the type of those found in the pia or tumor.

Sections across the optic and motor oculi nerves showed them to be ensheathed in a layer of cells similar to those found elsewhere in the pia.

The foregoing description is that of a large glioma, growing in the subependymal substance in the right occipito-temporal lobe, which has invaded the adjacent pia mater and spread widely through the pia of the greater part of the brain, cerebellum, cranial nerves, pons, medulla and at least the upper part of the spinal cord. In its extension it has pushed in among the fibers of the pia mater and in places lies in the subarachnoid space. From the spaces of the pia glia cells have invaded the lymph spaces of the adventitia of the blood vessels and extended deeply into the substance of the brain and in places these have broken through the vessel walls and formed focal metastases in the perivascular area.

The frequency with which such tumors occur is not great. Of some 87 diffuse tumors of the pia mater of the brain and cord, which were accessible to us in the literature, 18 were composed wholly or in part of glia elements. (Literature references 1-18.) Of these 11 cases (cases 1-11) were described as gliomata and 7 cases (cases 12-18) as glia-sarcomata.

In 11 instances (cases 1-5 and 13-18) the process was localized in the pia of the brain and in 7 instances (cases 6-12) the cord alone was involved. When the pia mater of the brain was involved there was always present a primary tumor of the brain substance.

The close proximity of most of these tumors to the ventricles of the brain has made the matter of their mode of spread rather uncertain. It has been suggested by some, notably Barnes (19) in the case of diffuse sarcoma of the pia that the cells from the primary tumor are wafted by the lymph through the spaces of the pia mater. By others it has been found that the primary tumor directly invades the pia and from this place starts its spread through the membrane.

Our own case has nothing to bear out the theory of spreading by way of the ventricle fluid. Nowhere are there accumulations of glia cells in the ependyma of the ventricles and the evidence of spreading by way of the direct invasion of the pia is abundantly shown. The tumor cells lie among the fibers of the pia and only

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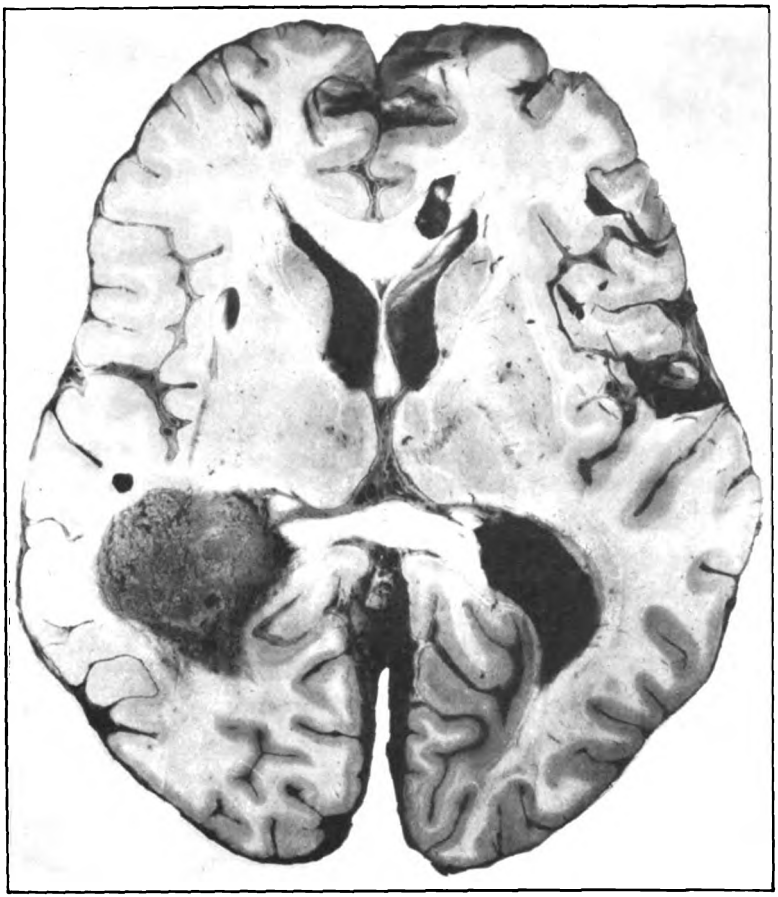

FIG. 1.—Tumor of temporo-occipital lobe with thickened pia mater.

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FIG. 2.—Vein in the tumor with walls infiltrated by glia cells. Mag. 60.

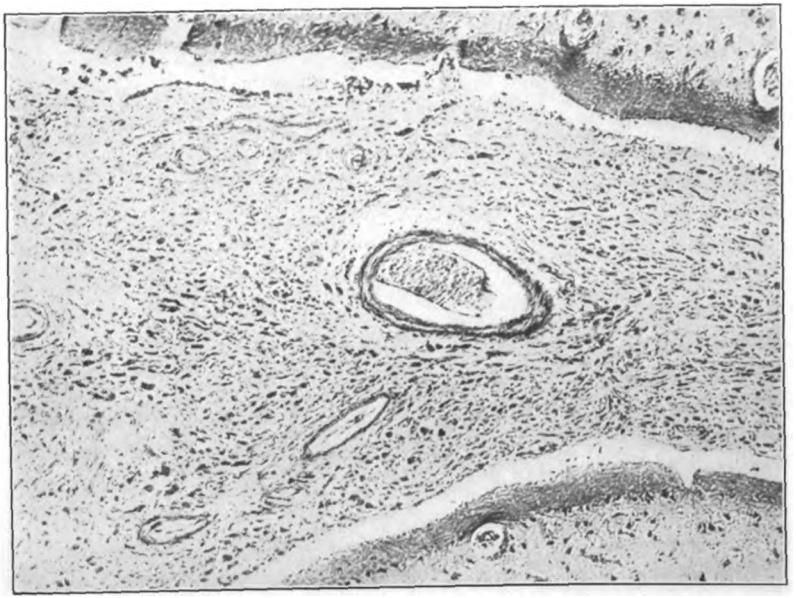

FIG. 3.—Pia of Sylvian Fissure, with infiltration of glia cells. Mag. 74.

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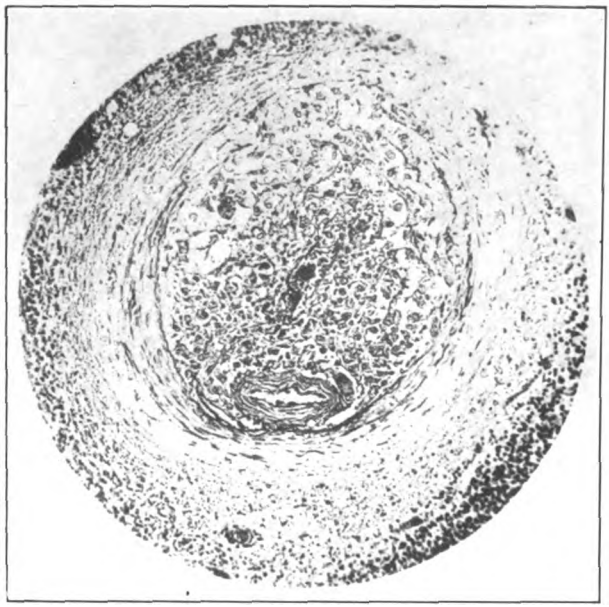

FIG. 4.—Artery with distension of adventitia by glia cells. Mag. 106.

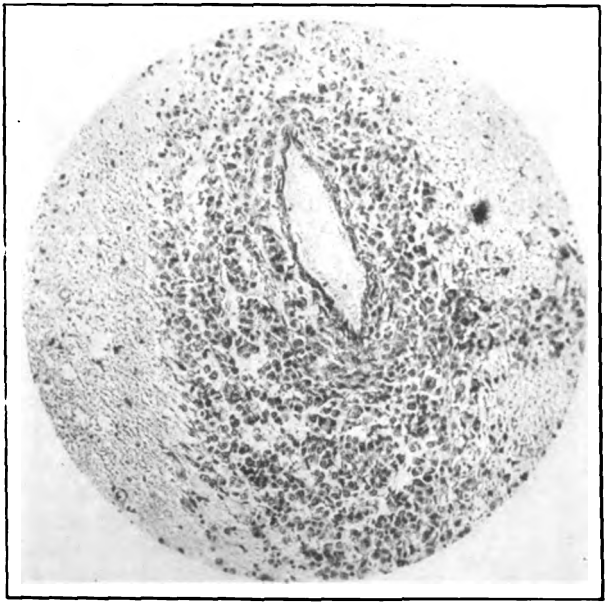

FIG. 5.—Invasion of a perivascular area by cells from adventitial infiltration. Mag. 106.

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locally, where there are large accumulations of cells, does the tumor extend out from the deeper layers of the pia. There were a number of places where there was such a limited amount of infiltration that this path of extension was well shown. In these regions the cells could be seen spreading out from larger accumulations near the blood vessels among the fibers of the lower strata of the pia into uninvolved portions of the membrane, and lying entirely within the pia.

The dissemination of the tumor elements is in large part through the lymph spaces among the adventitial fibers of the vessels. They enter these by way of the pia and often produce great distensions of the outer parts of the vessel wall. Such conditions lead to bursting of the walls and, in the instance of the breaking out of the infiltration of the adventitia in the vessel of the pontine substance and the formation of a new tumor, we have an exception to the statement of Bruns (20), that gliomata are solitary tumors and do not form metastases at a distance from the primary tumor. Further there are direct invasions of the brain substance from the infiltration of the pia, where glia cells break through the marginal glia and pass into the cortex. That this was best marked in the cerebellum may be due to the poor development of a marginal glia layer in this place.

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NEW FORMATION OF NERVE CELLS IN AN ISOLATED PART OF NERVOUS PORTION OF THE HYPOPHYSIS-TUMOR IN A CASE OF ACROMEGALY WITH DIABETES, WITH DISCUSSION OF THE HYPOPHYSIS-TUMORS FOUND SO FAR.*

By ADOLF MEYER.

After the publication of the exhaustive articles of Hinsdale and of Brooks on acromegalia it would seem rather superfluous to undertake a new summing up of the data concerning this disease. There is indeed only one point to which the writer would invite the attention of the reader, a point which has been dealt with in such an inharmonious manner by most writers that it is worth a careful investigation, although more than one author has foreshadowed the results at which we shall arrive. It is the question: What is the nature of the transformation which the hypophysis undergoes in acromegaly?

The case is one of typical *acromegaly in a woman of 52, of six years duration, associated with paranoic condition, and adenoma-like tumor of the hypophysis of a hyperplastic-progressive character.* The history is given by the patient.

The family history is negative. The patient was born in Ireland, 1847, and lived at home until 1865, when, 18 years old, she came to the United States with a number of others who had volunteered as missionaries. She went to Philadelphia because a friend of hers had a brother who was "cardinal of Pennsylvania." She went to a convent in Pennsylvania and taught there one and one-half years, but left to learn the millinery trade in Philadelphia. After one and one-half years she went to Boston, was bookkeeper and cashier for a year and a half, and then milliner for 16 years with some interruptions. At 32 (1879) she married, but lived with her husband only one year "because he was not worthy of her society." She opened a candy store and two years later a millinery store, and finally for the last eight years, she canvassed corsets.

Her health was good. She menstruated at 14 and reached the menopause about 1894.

Her troubles began about 1882 when she was 35 years old. The dates are somewhat indefinite and cannot be controlled because the patient has

*This paper forms contribution number nine of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service. It is here presented as read before the American Association of Pathology and Bacteriology, May, 1903.

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no near friends. She saw a policeman L. McC. in a compromising position with his servant on the steps and was "imprudent enough to speak about it to his mother-in-law." He has been her enemy ever since. When she moved to Clarendon Street, shortly afterwards, he came and gave his name as Mr. Miller, hired a suite of rooms paying $50 a month. The first sign of his enmity was that when she was doing something at the window, he called, "Mrs. C——," and then dodged and afterwards she saw him with a broom and dustpan, saying, "I will sweep you out of doors," at the same time making brushing movements. About nine years ago a Mrs. P—— and her son who was a theological student began to rob her. He came and took things from her store by piece-meal and carried them to his father's. She then was away from the store about a week waiting on a friend and, when she returned, found everything moved out and her trunk opened and $275 in money and a number of souvenirs taken. Mrs. P—— then bribed the police to keep the secret. For the last six years, she has been pursued by a woman whom she upbraided for leading an immoral life and for encouraging her daughter to do the same. The detective McC. and this woman L. persecuted her ever since then and *5 or 6 years ago the worry and the thought of these persecutions made* her mouth and eyes what they are and twisted her face out of shape. While she was peddling corsets a Jew often followed her and she saw how, on one occasion, by some signs, he influenced a woman when she came to the door, not to take the corsets after she had engaged them. Finally he took a room in the same house where she was boarding just before her commitment. Three years ago her pet dog was killed because of spite on the part of the woman with whom she boarded.

The physicians' certificate and a few letters from a hospital state that for some time the patient, a person of some education and refinement, has been drifting about without financial means and lodging where any one would keep her. From November 20, to December 24, 1898, she was treated in St. Elizabeth's hospital for diabetes mellitus. There she acted strangely at times, using very saucy and disrespectful language to both nurses and physicians. She would write poetry, draw, crochet, and sit at the window talking to the birds by turns. She declared that all the birds knew her and would come to her when she called them by name. She was very quick-tempered and when she was in a rage there was nothing too bad for her to say. She left unimproved.

February 16, 1899, she set her room on fire, probably by accident, and was taken by the police to the House of Detention. There she told the physicians, "a gang was instituted to harm me, a conspiracy to drive me from place to place. They steal from my bureau; a man in the house opposite has watched me for two years. Two policemen in priest's clothes came and took me yesterday." She was then committed to this hospital.

The following physical examination was made by Dr. Noble:

Weight, 115 lbs. Height, 4 feet 11 inches.

Hair originally brown, now quite gray. Eyes brown. Complexion light. Only fairly nourished. Muscles small and flabby.

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Vaccination scar on right arm. From smallpox in infancy a few pits seen on the anterior side of the trunk remain. Small cyst of the size of a pea at the outer canthus of the right eye. Slight abrasion over middle of left shin. Beside it a small mole of the size of a pea. A small mole, also size of pea, near the spine between the scapulæ. A transverse scar in left lumbar region, 4 cm. in length.

Tongue broad and thick. Patient believes it to be swollen in last two years.

Head and features symmetrical. The latter broad and coarse. Thick everted lower lip; face sparsely covered with coarse hair. Ears small; lobules attached. Palate about medium height and width. The teeth were few and decayed, with intervals between them. Patient says the features have become much coarser than formerly. Some puffiness of lids of both eyes. *Hands* and fingers have become club-shaped; the same condition of *feet*. Double hallux valgus. Second toe over-riding the first.

Measurements.—Distance from chin to nose 73 mm.

From the chin to between the orbital ridges 130 mm.

From the latter point to the bregma 120 mm.

From bregma to the occipital protuberance 29.5 cm.

Circumference of head (just above superciliary ridge and over occipital protuberance) 54 cm.

Length of each ear 6 cm.

Angle of jaw to chin on either side 12 cm.

Distance from right styloid of the olecranon to the tip of middle finger 17 cm.; left 17½ cm.

Right wrist 15 cm.; left wrist 15 cm.

Metacarpal bones, including thumb, 19 cm. on right hand; left practically the same (it may be a trifle less).

Circumference of right knuckles 19.5 cm.; left 18.5 cm.

Circumference of right thumb, 1st joint, 7 cm.; left the same.

Circumference of right index, middle joint, 7 cm.; left the same.

Circumference of neck 23 cm. (little if any evidence of thyroid).

Length of right foot 21.5 cm.; left the same.

Over ball of large toe right 24.5 cm.; left 22.5 cm.

Circumference over instep of right 22.5 cm.; left 21.5 cm.

Circumference of heel and instep right 31 cm.; left the same.

Circumference of middle of great toe right 8.5 cm.; left the same.

Circumference of right leg just above ankle 18 cm.; left the same.

Circumference of middle of right leg 26 cm.; left the same.

Circumference over right patella 30 cm.; left the same.

Circumference of right thigh 35.5 cm.; left 35 cm.

Circumference of middle of right arm 16 cm.; left 18 cm.

Circumference over right olecranon 20 cm.; left 19.5 cm.

Circumference of right upper arm 19 cm.; left 20.5 cm.

Circumference of trunk over umbilicus 87 cm.

General Sensations.—Feeling of exhaustion. Pain encircling the sides of the head, severe pains in the knees, confined to the joints, also in the

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hands. Occasional pains across the small of back. No soreness along the course of large nerve trunks. Patient complains of pain in the bones, away from the joint.

Eyes.—Movements normal. Pupils react directly and consensually. Vision very poor. Always wore glasses. Visited out-patients' department, City Hospital, in about 1890 on account of an injury of left eye, at which time she had "muscæ volitantes." The field of vision is greatly restricted, concentrically, on both eyes.

Hearing.—Watch heard at distance of one inch from either side. No history of otitis media.

Smell.—Patient distinguishes and names odors (patient says better on right than left).

Taste.—Normal.

Cutaneous Sensibilities.—Touch, pain and temperature normal.

Reflexes.—Of elbows, wrists, knees diminished, more reaction in the left knee than right Plantars exaggerated slightly.

Motor Functions.—Of face normal. Tongue protrudes in median line. Coordination of hands good. Gait weak and unsteady. No Romberg symptom. General muscular weakness. No tremor of tongue or hands.

Sleep poor in the last fortnight. Appetite good. Tongue clean but dry and red and large. Teeth poor. Bowels with tendency to constipation. Intense *thirst* since 1897. Water passed frequently and in large quantities, but less now than a month and a half ago. Some pruritus vulvæ in last two months. Abdomen distended, somewhat tympanitic. Liver dullness from sixth rib to costal margin. Moderate kyphosis of the dorsal region.

Lungs.—Negative. Patient says her *voice* has become coarse and gruff in the last three years.

Heart.—Outlines of dullness: Right border of sternum, 3d interspace, one cm. outside the nipple line. Apex beat one cm. outside nipple line. Systolic murmur loudest at apex, transmitted toward the axilla. Aortic first sound roughened. Pulmonic second accentuated. Palpitation at times. Pulse 90 lying; 96 sitting. Rigidity of radials and temporals.

Menopause.—Established four years ago.

Urine.—February 20. Pale straw color, clear, acid, 1034, heavy with *glucose*, no albumen. Few blood corpuscles, epithelium from bladder, leukocytes.

July 19-20, 11½ pints of urine in 24 hours.

Urine.—July 21. Pale straw colored, with some cloudiness all through specimen, 1028, acid, no albumen, large quantity of sugar. Quite a number of single and stratified pavement epithelia.

Summary: The face, tongue, hands and feet show the typical alterations of acromegaly, which have developed during the last six years, from the age of 46. There is further marked constriction of the visual field, with "mouches volantes" on the left, a gruff, nasal voice, and diabetes mellitus (intense thirst since 1897) with pruritus vulvæ; no complete disappearance of sugar when dieting; diminution of the right knee jerk; mitral insufficiency and rigidity of radials and temporals, general exhaustion.

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During the residence at the hospital, from February 17, 1899, to her death on August 14, 1899, the patient presented a rather uniform picture. She was somewhat restless and complained much of headache or of being neglected. She would usually lie on her bed, rather carelessly dressed, or rarely sit in a chair, with a pitcher of water on a table near her. She shows in her manner of speech a certain element of refinement which however gives way very easily in her behavior with the attendants and even at times in her fault-finding with everything around her. She is apt to use very endearing expressions to the physicians and occasionally to a patient, and when speaking of her former appearance, her tiny features and graceful hands and feet, her beautiful work, her excellent memory and her superiority over all those with whom she lived and was now put; and in her statements of her own family she indulges in rather glowing colors. In the account of her earlier persecutions she is very profuse and frequently produces new facts. The history in the anamnesis is put together of such facts; they are poorly correlated more or less independent grievances and not systematized in detail beyond the general principle of persecution and the alliance of Mrs. L—— with the detective (who denies in a letter all knowledge of the patient). Her circumstantiality rivals with the clever choice of expressions. Her complaints referred partly to feebleness or headaches (through the parietal regions) and pains in her wrists and knees; occasionally to lack of sleep, but especially to the treatment and neglect by the attendants, the food, etc. She knows as much as President McKinley and is like a pure baby among these patients and everybody, especially the attendants, too mean and low to wait on her, immoral, unfit to approach her to take her temperature. She often invents falsehoods (the attendant had been wearing her skirt on her wheel and has stretched her jacket in trying to get it around her; she knows a strange woman in disguise"), is apt to become obscene and to talk to visitors in this tone. A lame pigeon which happened to stay in her room a few days and flew away was "killed by the attendants." July 3 the attendants "put a rat in her room to kill her." She did not like to be examined and was difficult to hold to accuracy as she talked continually of other matters. Her weight varied between 119 and 126. At times she was troubled with flatulence. Even under careful dieting the sugar did not disappear completely from the urine.

August 11 she began to vomit and to have diarrhœa, she grew weaker and unconscious on August 13, with short conscious intervals during the afternoon; she was so weak that she could not raise the head in vomiting. She died in a coma, August 14, 1899.

Report of the *autopsy*.—Death at 11.40 a. m., post-mortem examination at 1.30 p. m., August 14, 1899

Short female body with beginning rigor mortis. Lividities of dependent parts.

Panniculus adiposus about 1 cm. in thickness, light colored. Muscles rather thin, fairly dark colored. Clavicle, sternum and the cartilaginous part of ribs prominent. The right and left first, and the right and left

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second, and the right third and fourth cartilaginous junctures prominent, passing abruptly into the rib.

Stomach reaching the umbilical line. Liver extending 10 cm. below ensiform process and reaching the costal margin in a transverse line, 4 cm. above the umbilicus.

Omentum with moderate amount of fat. Intestines grayish, little injected. No fluid in the abdominal cavity. Bladder fairly filled. Uterus in normal position, thin, with two fibroids, one cherry-sized in posterior wall, and one pea-sized in the sub-peritoneal space. Ovaries small. In the broad ligament on either side there is a thin strand, feeling like arteriosclerotic blood-vessels.

The diaphragm at the fifth rib on the left and the sixth interspace on the right. Both eighth ribs have a free anterior termination about 9 cm. from ensiform process. Both ninth ribs extend to 13 cm. from ensiform process. No thymus present.

Left lung slightly adherent at apex; right lung with one firm strand passing from the upper lobe to the chest wall, which is also slightly adherent at the apex.

Heart 380 gm. Very little fluid in the pericardium. Large milk spot over right ventricle, and various white streaks over apex. Heart large with contracted left ventricle. Prominent veins and distinctly nodular, prominent, coronary vessels, bead-like in their whole extent, and tortuous. A large mixed clot in the right auricle and ventricle extending into the pulmonary. The tricuspid with thin valves. Peculiar vesicular elevations of endocardium, resembling fresh herpes vesicles. On the posterior aspect of the auricle and ventricles there are diffuse ecchymoses and also scattered ones, similar, but few near the apex and along the posterior left ridges; and a gray spot of the muscle of the left ventricle just 1 cm. from the apex on the posterior side measuring 5 x 11 mm. Intima of right ventricle free. Intima of pulmonary with a number of yellow patches. Left auricle with numerous ecchymoses only on outer surface, none beneath intima. The mitral ring has a number of calcareous spicules; the valve is open only to one finger. The mitral ring when opened measures 9 cm. The valves are short and considerably thickened along the margins, but without fresh vegetations. The largest calcareous deposits are situated at the attachment of the posterior mitral, there being a whole nest of calcareous deposits. The cross-section of the muscle of the left ventricle is 21 mm. and 11 mm. in the posterior wall where the muscle is mottled, especially towards the apex where the gray spot is noticed. The mitral shows diffuse yellow spots, also the aorta very slight diffuse ones, becoming more numerous near the aortic ring. The ecchymoses at the base of the ventricles are not accounted for except by the presence of very extensive calcareous degeneration of vessels, and a few clots which do not resemble well defined thrombi, but rather fragmentary coagula, especially in the very atheromatous posterior artery of the left ventricle.

Left lung, 395 gm. Bluish discolored only in the posterior part of the

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lower lobe. Frothy fluid coming from the chief bronchus. No foci of induration, but diffuse moderate œdema. Bronchi somewhat hyperæmic.

Right lung, 460 gm. Two scars in the apex without induration. Very slight lividity of the lower lobe. Bronchus also with dark colored mucus, slaty (similar to stomach contents), moderate œdema.

Pancreas of normal consistence and appearance.

Spleen, 215 gm., with very calcareous artery, rather large and flabby. One hæmorrhagic area, otherwise rather pale; pulpa readily scraped off.

Stomach with greenish slate-colored mucus on the very pale mucosa. In the fundus there are some erosions. Very few tiny ecchymoses.

Liver, 2340 gm., very large, diffusely mottled with large, very plain lobules, yellow in the periphery.

Left kidney, 210 gm., large, surface remarkably mottled, not unlike the appearance of the liver. Cortex of moderate width. Capsules not much adherent. Right kidney, 180 gm., similar with an adhesion of capsule in one part in one depression only. One pea-sized tumor in the cortex.

Skull fairly regular. Rather dark bluish color. Almost complete obliteration of the sutures except at the bregma. Inside granite-gray, slightly mottled, with numerous depressions and a few hyperostoses, especially in the left frontal bone. Sulci of blood vessels broad and deep, not ragged. Only one translucent spot at the depression to the left of bregma.

Weight of clavarium, 340 (the average weight being 300-320). Inside of dura free on both sides. Pia slightly whitish with white strands over the anterior end of the first frontal fissure. Few Pacchionian granulations. No œdema. Between the two optic nerves a *tumor* appears. The Sella Turcica is considerably broadened out and broken in order to perceive the connections of the tumor. The tumor is visible in front of a transverse membrane extending between the two clinoid processes and protrudes beyond the chiasma as a cherry-sized body with two secondary excrescences beyond its capsule, both mulberry-shaped, one with 4 grains and the other larger, less plainly granulated, just over the left optic nerve.

Beneath the said ligament or membrane is the *chief portion of the tumor* between the two cavernous sinuses 18 mm. broad and deep. When bent forward the tumor from the chiasma to the tip is 22 mm. long. The infundibulum turns to the left and then towards the median line into the tumor at a point just over the posterior clinoid process which is overridden backward by the larger posterior part of the tumor. The third, nerves are perfectly free, the corpora albicantia flattened. On the left side, between the tumor proper and the cavernous sinus, there is a closer adherence and a soft smeary gray matter can be scraped out, probably contents of the tumor, which however did not appear burst.

The chiasma is considerably flattened and a distinct depression is seen between it and the beginning of the frontal bone.

The basal arteries with considerable atheromatous thickening and distinct calcareous deposits. No adhesion of the pia as far as it is removed.

The weight of the brain 1075 gm.

Spinal cord with one large arachnoid plaque; nothing else abnormal.

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Anatomical Summary.—Tumor of hypophysis. Acromegalic malformation of face, hands and feet. Obliteration of sutures of skull. Hyperæmia of diploe and presence of several hyperostoses on inside of frontal bone. Very marked atheroma of basal, splenic and coronary arteries. Myocarditic scars. Atrophy of brain. Thickening of cords and margins of mitral valve and endarteritis of aorta. Numerous ecchymoses of epicardium. Œdema of lungs (slight). Slate-colored contents of bronchi. Enlarged liver, spleen and kidneys. Small tumor of left kidney. Subserous fibromata of uterus.

Epicrisis.—Our patient was an Irish woman of probably somewhat peculiar makeup, and later in life typical paranoic disposition. At the age of 46, she began to develop acromegalia, a change of her tongue, voice, face, hands and feet and she ascribes it to the worry produced by her persecutors. Later she developed diabetes and the first authentic report from a hospital describes her as peculiar, fault-finding, talking to the birds, etc.

At our hospital her mental condition is best described by the term "paranoic disposition" since her retrospective complaints as well as those referring to the time of the hospital residence were rather poorly systematized and fleeting.

It might be rather far fetched to see any correlation between her psychosis and the acromegaly. The observation of Pick, Hutchings, Garnier and Santenoise, Joffroy, Blair, Feindel and Worcester and several others * go to show that the mental disorders are either accidental or they are a certain degree of dementia accounted for by the presence of the tumor or of arteriosclerosis.

Among the physical features, the existence of a probably concentric restriction of the field of vision pointed to the existence of a tumor.

The findings concerning the hypophysis are the only feature to which we wish to devote a more careful discussion.

In order to spare the tumor as much as possible the posterior clinoid process was broken off with the tumor and measures of the Sella Turcica were not taken. It was distinctly widened and its walls soft, so that they broke readily. The posterior clinoid process makes a transverse depression on the basal side of the tumor. The anterior smaller part protrudes in front of the chiasma and shows *mulberry-like projections* beyond the original mem-

* See the bibliography of Brooks and his remarks on p. 560.

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brane of the hypophysis; the posterior larger part of the tumor overlaps the posterior clinoid process backward and flattened the corpora albicantia. On the left side the tumor is somewhat adherent to the cavernous sinus and gray juice is found on that side after the removal although no point of rupture of the gland could be found. Beyond this there is absolutely no trace of propagation of the tumor into the neighboring tissues such as was present in the cases of Strümpell (l. c. pp. 79 and 80), Arnold, Osborne, (Wolf?), Pechkranz, Rolleston, Hansemann, and Caton and Paul; but we shall presently see, that our specimens give very good illustrations of how this propagation takes place.

We start in our *microscopic description* from a section which gives the main body in its greatest (horizontal) circumference, and also a more superficial slice of the anterior projection with a fair preservation of the membrane. On the ground of this survey of the entire section we shall study the various distinctive portions. Although great care was used to preserve the limiting membrane perfectly intact there are a few small superficial defects corresponding to the presence of firmer connection with the surrounding tissue, such as was noted concerning the cavernous sinus.

The center of the tumor appears to be of the same structure as that in the cases of Strümpell and Brooks. There is an irregular and loose net of blood vessels, mostly between 6 and 10 μ in diameter, not infrequently 15 or even a few up to 80 or 100 μ. The average red blood corpuscles in the section measured as 4.5 to 5 μ. Even in the latter the wall is not thicker than 8.5 μ, and in most of the largest ones not over 3 μ. The largest vessel has a number of cross-sections of nuclei of the intima and a moderate number of circular nuclei in the fibrillary coat; the smaller vessels have only few longitudinal cells, and but very little if any adventitia. The rule is that the capillaries and even the larger vessels are directly surrounded by a layer of the parenchyma cells without any partitions of connective tissue, whereas in the case of a few larger vessels (arterioles and veins) one gains distinctly the impression that the parenchyma cells have invaded the adventitia and that a reticulum of connective tissue results which contains isolated cells or clusters of three to ten, and reminds one of the reticulated structure of a lymphgland. Some of the fibril-strands contain a capillary. Wherever the capillaries

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are thin and far from the larger vessels they carry with them but very little connective tissue, so that the largest part of the interior of the hypophysis has the appearance of *loosely arranged cells, a certain number of which are held together by very thin-walled capillaries and but very rarely by a few strands of fibrils.*

Towards the surface the picture is different owing to the more concentric arrangement of the tissue-elements. The blood-vessels are more densely arranged and mostly parallel with the connective tissue capsule of the gland which consists of wavy fibrillæ loosely arranged and has an average thickness of 200 μ, a few flattened nuclei and a varying, usually small number of blood-vessels of the character of a sinus.

The same holds for the numerous and well-filled blood vessels of the subjacent tumor stratum, to the depth of 75 to 300 μ. This stratum consists of a fine and regular net of strands of fibrillar meshes which either enclose blood—*i. e.* are sinus-shaped vessels with very scarce endothelial nuclei—or parenchyma cells. The strands which separate cell-nests show nuclei exactly like the endothelial nuclei mentioned but probably intramural.

The parenchyma cells hardly require much verbal description since the drawings represent them satisfactorily. They vary much in size, from a diameter of 8 to 10 μ to 40 μ and more. They are of round or triangular outline, with one nucleus in the smaller ones, two or more in most of the larger ones, mostly eccentric, and clear with a number of distinct granules and frequently one or even two fairly distinct nucleoli.

The protoplasm of the cells of the body of the tumor is mostly lightly stained with eosine, fairly homogeneous, occasionally with vacuoles; in the other sections most cells were stained light blue and only a small number with eosine. Since the reaction was not constant little weight is laid on this point beyond the statement that the more superficial cell-layers and those most compressed were mostly of a bluish tinge, and also many of the cells which formed plugs in the herniæ of the membrane of the hypophysis.

In a limited part there are several areas of *lymphoid infiltration* among the ordinary parenchymatous tumor mass.

In several parts of the section there are isolated tubes or alveoli with *colloid substance* and somewhat flattened epithelium, otherwise not different from the other cells of the small type. These

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alveoli and colloid masses are, however, both smaller and less numerous than those of the normal gland where they are usually limited to the line of contact between the glandular and the infundibular part. The tubes occur also without colloid; probably through the retraction of the colloid mass; on the other hand there are colloid masses much decayed surrounded by only few and much flattened epithelia and still others in which epithelia have emigrated into the colloid mass, as in the colloid of the thyroid.

The most interesting feature of the tumor lies in its *mode of propagation.* The section shows various steps from the encroachment of the fibrous membrane and formation of cell-nests within its meshes, to the formation of hernias and the bursting into bone-tissue. The figures show this so well that a description is unnecessary. The smeary substance consisting of hypophysis cells and found in the Sella Turcica after the removal of the tumor may in part have emigrated in this manner. Another interesting way is illustrated by Fig. 8 where a bone-spicule has, as it were, punctured the membrane and given origin to a hernia into the membranes and to a prolapse beyond the membrane around the bone. Considering the care with which the tumor was removed, these findings are likely to throw some light on the cases of Arnold, Hansemann, Strümpell, and especially the case of Osborne which Prof. Bartlett has described and pictured very excellently.

Several peculiar findings led to the observation that the nervous part of the hypophysis was at one point so invaded or distended that one portion became completely detached from the rest and formed *an independent island of the nervous portion* on the glandular tumor. A striking *monstrosity of both glandular cells and of the cells of the nervous portion* was present only in this island. The lamina of the tumor in which this island was found is separated by a lamina without any nervous portion from the part to which the infundibulum is attached. A section parallel with the axis of the infundibulum and perpendicular to the primary laminæ showed that the nervous part was hypertrophic and spread as a cap over part of the tumor. In some parts it was invaded by mostly solid tubes of glandular cells, which were, however, nowhere out of contact with the tumor mass, after the type of metastases. There were also, a number of larger colloid

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lumps of up to 1.4 mm. in diameter at the limiting line, as in the normal hypophysis. The infundibular part consisted chiefly of the normal neuroglia tissue.

This condition is considerably changed in the *sequestrated island of the nervous portion.* In the normal hypophysis the transition is sudden and very plainly marked, especially because this is the place of the frequent colloid nests. In this part of our tumor the transition is slurred over and the stroma of the tumor goes over without limit into the stroma of the nervous portion. Moreover, there are the following cell-changes:

1. The glandular elements are larger and have a greatly increased number of nuclei.

2. While the numerous normal pituitary bodies at our disposal show no distinct nerve-cells, but only more or less well defined spindles of the character of neuroglia, with faint cell body and slender fibrils, the present tumor shows unquestionably a new formation of nerve-cells besides the existence of enlarged neuroglia-elements. A section from a rat-embryo shows very plainly a stage of development at which these cells are quite like those forming the thalamic nuclei or the other embryonic cell-masses of the neural tube. Later the differentiation goes in various directions, and in the "posterior" or nervous part of the hypophysis mainly towards the formation of the neuroglia. But in our case there is an abnormal development of the relatively slumbering elements such as I have not seen anywhere else and the occurrence of which, indeed, I had considered improbable. In distinction from the numerous claims of *new formation of ganglion cells* in descriptions of neuroglioma ganglionare these cells show *very distinct Nissl-bodies.*

But the elements of this part of the tumor are in other respects a veritable hot-bed of *monstrosities.* The chief feature is the atypical hyperplasia of all the elements along the zone of contact of the glandular and the neural portion, and intermingling of these elements which goes so far as to create serious difficulty for a plain division into neural and glandular products. The common features are the enlargement of the cells as a whole, the multiplicity of the nuclei and the presence of one fair-sized nucleolus, even in many nuclei of the hypophysis cells. Thus, one section shows *three nuclei in a nerve-cell,* and several hypo-

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physis cells look so much like nerve-cells that it is almost questionable whether a line of distinction can be drawn with absolute safety. This is especially the case because a few of the hypophysis cells seem not quite devoid of granules which stain with methylene blue.

These findings show plainly some of the risks run by those who merely examine one or two isolated slices of such a tumor. We have found areas which suggest normal hypophysis, others which might be taken for a glioma; other parts might be interpreted as sarcoma; the plugs of hypophysis cells, if not examined in serial sections might make one think of cancer, etc. This is what stares one in the face on looking over the literature. There is such variance that one would hardly trust the view that there is after all one lesion of the hypophysis typically connected with acromegaly. The confusing nomenclature and the frequently poor description and often the lack of illustrations, together with many features giving collateral evidence of the not altogether reliable judgment of some of the writers, should be considered before we refuse the increasing possibility of a common unit in these tumors which appears to be the *conditio sine qua non* of their association with acromegaly and conclusive evidence in favor of the views of Tamburini, Brooks, and others.

This view is endorsed by several lines of argument. Destructive lesions of the hypophysis (absence of the hypophysis, or destruction by tumors) are not associated with acromegaly. This is shown in the cases of gumma (Beadles, Hunter), tubercle (Schmidt), etc. One of the recent cases brought into connection with this question is the one of Burr and Riesman. The writers fulfill the requirement of giving a drawing of a section of the tumor, which is a spindle-cell sarcoma. It leaves intact a certain amount of normal tissue of the hypophysis. The writers conclude that "acromegaly is caused by disease of the hypophysis, and that for its production the lesions must be complete, *i. e.*, must affect the entire glandular structure"; a conclusion which could hardly be supported now. The "cases of acromegaly" without tumor of the hypophysis also furnish evidence for the view of a uniform alteration of the hypophysis in true acromegaly. They prove to be either poorly examined, poorly reported or belonging to the group of secondary hyperplastic osteopathy. Schmidt uses

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against the hypophyseal origin Waldo's case—although there was a caseating mass in the lungs; Dallemagne's case III, which (together with his case II) lacks conclusive descriptive evidence for the existence of true acromegaly, beyond Dallemagne's assurance that they were cases of acromegaly (a conclusion which one does not like to let pass in the face of other evidence of rather hasty reasoning in connection with his first case, in which he lays weight on the presence of scattered glia nuclei near the central canal of the cord and on small encapsulated gliomata in the bulb, and concludes that since the hypophysis is merely the anterior end of the central canal these proliferations of glia-cells and the sarcomatous tumefaction of the hypophysis are all of the same order); and the case of Hobschewnikoff (syringomyelia). Bonard's description of a "normal" hypophysis gives too large measures to really justify this verdict, and Hunter's and Linsmayer's cases are eliminated by Schmidt as normal with too little evidence whereas, to me, their description appears convincing that they were adenomata.

The great difficulty seems to rest on the heterogeneous nature of the positive cases. Through the kindness of the librarian of the surgeon general's office, I was able to go through all the original descriptions of the tumors in question, and the conclusion is as follows:

Many of the descriptions are very defective and but few are accompanied by adequate drawings. Neither description nor name of the tumor are given by Ponfick, Squance, Thomson, Lathuray, Cunningham and Rathmell. Comini, who describes a tumor quite analogous to ours, abstains from naming; also Duchesnau, and Boyce and Beadles. The terminology used is obviously tentative with most writers. Gauthier calls the contents of the tumor "pulpe cérébrale" and says there were no other elements but those of normal "pulpe cerebrale." Dana and Fratenich speak of colloid degeneration and Lanceraux of a tumor containing liquid. Mosse et Daunic speak of a "sarcoma nevroglique fuso-cellulaire fasciculé," Bury of a glioma (without details), Levy of a malignant tumor.

Sarcoma is the term used by Dallemagne, McJohnston, Strümpell (1), Strümpell (2), Uhthoff, Osborne, and, without description, by Griffith:

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Medium-sized round-celled sarcoma by Rolleston.

Round-cell sarcoma by Caton and Paul and Spiller.

Large-celled sarcoma by Pineles.

Sarcomatous struma by Hansemann.

Sarcoma globo-cellulare angiomatodes by Pechkranz.

Spindle-cell sarcoma with psammomatous degeneration by Worcester.

Cylindroma by Wolf.

Roxburg and Collis hesitate over something midway between a glioma and a round-cell sarcoma; Arnold between lymph-adenoma and sarcoma, Dalton between sarcoma and hypertrophy.

Claus and Van der Stricht see in it a *lymphoid tissue* with secondary necrosis (Van der Stricht had described analogous lymphoid changes in the stomach and liver in leucæmia the year before); Sigurini and Caporiacco a *lymphadenoma.*

The term *adenoma* is used for part of the hypophysis by Linsmayer, and for the whole by Tamburini, Boltz, Bailey, Henrot, Fritsche and Klebs, Holsti, Godlee, Mitchell and Le Count.

Adenoma or simple hypertrophy by Furnivall, Marie and Marinesco, Cepeda, Bourneville, Brooks.

Adenoma or goitre by Shattuck.

Vascular hypertrophy by Hunter, and Brigidi.

Schultze and Jores waver between "*angiosarcoma and hyperplasia or adenomatosis;* Buday and Jansco between *adenosarcoma and angiosarcoma.*

The description of the elements of the tumor shows far greater uniformity than the nomenclature would suggest. The tumors described as sarcoma and as adenoma allow mostly a perfectly conclusive identification. Those with qualifying adjectives show mostly efforts that would point to the same interpretation. Types of most refractory forms are those of Worcester, Wolf and Spiller. Wolf's drawing leaves one in doubt; Dr. Spiller's preparation shows plainly the hypophysis cells of our tumor and Dr. Worcester's case also. Bury's glioma I am inclined to recognize in a hypertrophic posterior lobe and Mossé and Daunic's term "sarcoma névroglique fusocellulaire fasciculé" shows plainly the effort to harmonize the various elements such as we have also in our tumor.

Our conclusions are:

1. The change in the hypophysis in acromegaly seems to be

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more uniform than the descriptive terms in the literature would suggest. The differences of opinion may be due in part to a limitation of the examination to one or few portions of the tumor.

2. The change found in our case is identical with that described by Brooks. It shows also the mode of propagation of the tumor.

3. In a sequestrated part of the nervous portion unmistakable new formation of nerve-cells with Nissl-bodies has occurred beside other monstrosities.

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These works also contain the bibliography.

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FIG. 1.—Case of acromegaly with diabetes and paranoic development.

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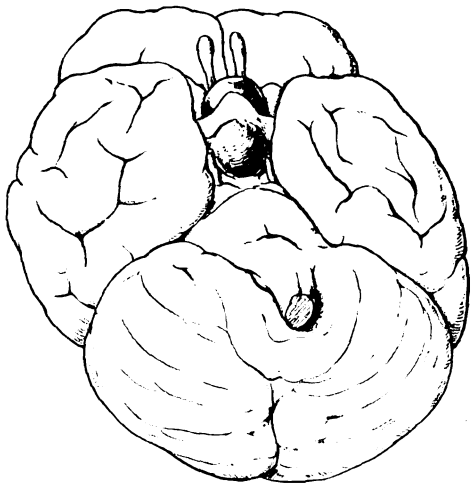

FIG. 2.—Base of brain with tumor (with the posterior clinoid process in position).

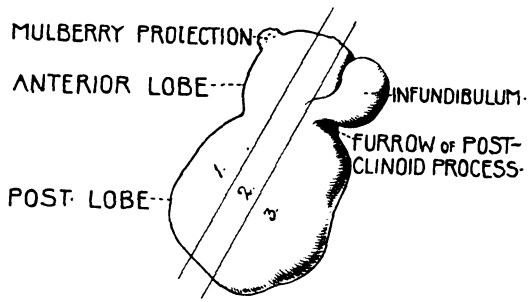

FIG. 3.—Hypophysis tumor with the planes of section.
Piece 1. With sequestrated part of the nervous portion. (See Fig. 4.)
Piece 2. Without a trace of nervous portion.
Piece 3. With the principal part of the nervous portion (without nerve-cells).
The terms anterior lobe and posterior lobe are used purely topographically and not in the sense of differentiation of the normal gland.

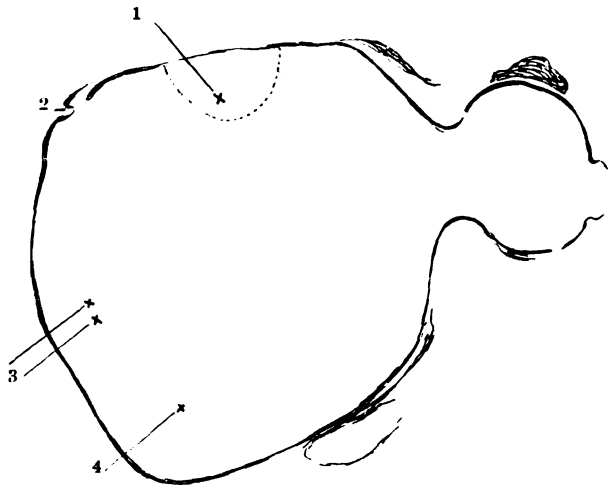

FIG. 4.—Section from block 1.
1. Sequestrated nervous part with newly-formed neural cells (Fig. 9).
2. Break of capsule around a bone-spicule (mode of propagation, Fig. 8).
3. Positions of Figs. 5 and 6.
4. Colloid tube (isolated). (Fig. 7.) Much more numerous in block 3.

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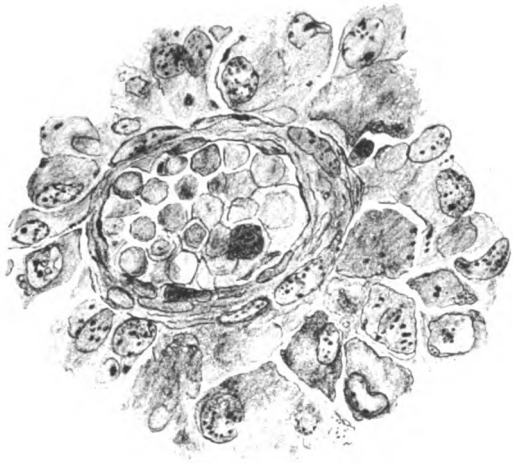

FIG. 5.—Groups of the otherwise loose cells around blood-vessels. Septa very scanty.

FIG. 6.—Groups of the otherwise loose cells around blood-vessels. Septa very scanty.

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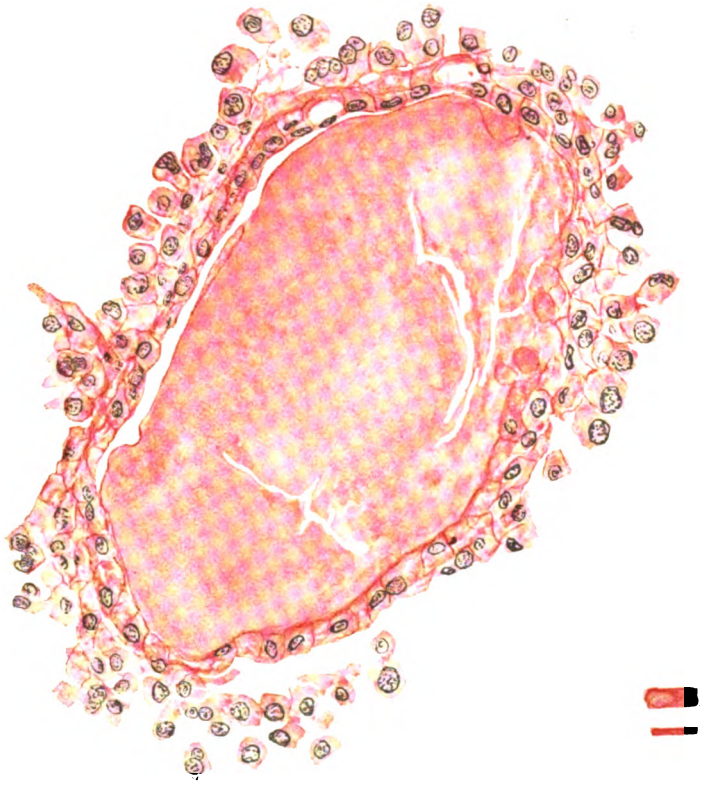

FIG. 7.—Colloid duct.

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FIG. 8.—Breaking of the capsule by a bone-spicule. Beginning of mulberry-projections and of invasion of neighboring tissue.

FIG. 9.—Atypical neural cells in the sequestrated part of the nervous portion.

Several of the cells have from 2-4 nuclei. Typical tigroid substance.

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A STUDY OF THE BRAIN IN A CASE OF CATATONIC HIRNTOD.*†

By SAMUEL T. ORTON, M. D.

(*From the Laboratory of the Worcester State Hospital, Massachusetts.*)

Those cases of mental disease which show at autopsy no demonstrable gross lesions of a character sufficient to be assigned as causes of death and in which both bacteriologic and microscopic examinations fail to reveal any further evidence of importance, yield material which justifies intensive study.

The case here reported seems to be such a case of true Hirntod and while the patient had been an inmate of this hospital for only five days and the psychosis had outwardly existed only a few days more so that its type cannot be definitely determined, it seems to have been a case of acute catatonic excitement of the dementia præcox group.

The case is that of a young unmarried girl of 22 years, whose psychosis appeared with sudden onset about July 25, 1910. She was admitted to the hospital August 4, 1910, and exhibited continued restlessness, was resistive and showed marked affect of fear with occasional exclamations. She was for the most part mute and negativistic though on the second day after continued urging the following results were obtained:

How do you do? *Pretty well.* Where are you? (Looks away from physician.) Do you know where you are? *Yes.* What place is this? *Rutland.* Is it your home? *No.* Are you sick? *No, I have not had any real sickness.* Why are you in bed? (No response.) Why do you not answer? (No response.) Show your tongue. (After a long pause finally does so.) Have you any pain in your head or anywhere? (No response at first—finally shakes head in negation.) Are you worried? (No response.)

She failed to respond to the ordinary hydrotherapeutic measures to reduce the restlessness and at 2 p. m. on August 9, 1910, on the

* This paper forms contribution number ten of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

† Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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fifth day after admission began to collapse rapidly. Stimular were exhibited but with no avail and she died at 5.45 p. m.

The anamnesis reveals the fact that the patient's father was chronic alcoholic of French-Canadian descent who though a go workman could not keep employment long on account of l alcoholism. The mother was an English woman of an irascil disposition subject to outbreaks of temper in marked disproporti to the aggravating stimulus. The mother died of Bright's disea at the age of 53, when the patient was 16 years old, and the fath sold the furnishings of the house and with the proceeds started an extended alcoholic debauch leaving the patient to shift f herself. She was taken into the family of one of her school co: panions with whom she lived for two years. Most of the ana: nesis obtainable is from this family though corroborated by h employer of the year succeeding. She was described as an "o creature" with a tendency to aloofness, preferring to be alo: not fond of social amusements, "cranky one day, angelic t next"; as a rule rather stupid though with a varying amount evinced brilliance. Her morals were good as far as were kno and she used no alcohol or drugs. She was subject to fits of ang on minor provocation.

She had little company and very few friends and one of h favorite amusements seemed to be to walk alone in the evenin

No account is obtainable of her history during the two ye: before her admission to this hospital. Permission for the autop was unfortunately not obtainable until 25 hours after death.

The necropsy protocol was as follows:

Body of a well-developed and well-nourished white female. Body h absent. Rigor present. Lividity rather marked posteriorly and over all left arm. The anterior aspect of trunk and all four limbs shows numer purplish red ecchymoses of varying size. There are also a number greenish discolored areas (bruises).

Peritoneal Cavity.—Panniculus adiposus 2 cm. Appendix retro-ca and apparently lies beneath the cæcal peritoneum.

Pericardial Cavity.—The pericardium over a small portion of its ante surface is dry and translucent and brittle to the scissors, lightly adhe to similar dry patch on visceral pericardium. Remainder of pericar cavity normal.

Pleural Cavities.—Normal.

Heart.—Wt. 240 gm. Tricuspid valve 11.5 cm. Pulmonary valve cm. Mitral valve 11 cm. Aortic valve 5 cm. Endocardium of left ver

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cle shows a large area of diffuse hæmorrhagic staining. Valves all normal. Myocardium 1 cm. and rather pale but of fair firmness. Base of aorta clear. Coronaries normal.

Lungs.—Both crepitant. Anterior borders of both salmon pink. Posteriorly considerably darker. Cut section of posterior portion very dark. No excess of fluid. Large quantities of dark fluid blood expressible from vessels.

Spleen.—Wt. 210 gm. Capsule smooth, rather light in color. Pulp soft, mottled pink and plum color. Trabeculæ and corpuscles not visible.

Liver.—Wt. 1550 gm. Capsule smooth and thin. Liver substance friable. Color on section is a dark mahogany with an indistinct mottling of yellowish gray.

Gastro-Intestinal Tract.—Negative.

Pancreas.—Very soft.

Kidneys.—Wt. 205 gm. Capsule strips easily leaving a smooth surface. Cortex averages 6 mm. Cortex of a homogeneous purplish gray. Glomeruli visible as very delicate glistening points.

Adrenals.—Normal.

Genitalia.—External surface of cervix deeply congested. Cervical canal contains a small plug of clear mucus. Several follicular cysts in either ovary. One small corpus luteum in left ovary.

Aorta.—Normal.

Calvarium.—Thin. Wide line of diploe everywhere. The external surface of both parietal bosses shows a purplish color. Section through this portion shows a very thin external table and a wide purplish band of diploe. Deep depressions of Pacchyonian granulations. Dura translucent in frontal zone, slightly more opaque posteriorly. Pia thin and translucent everywhere. Considerably congested in finer capillaries.

Brain.—Wt. 1300 gm. Convolutions of good width and well approximated. Palpation reveals very little variation in firmness. The whole brain is soft and except for the normal firmness at the poles and a slight questionable increase in resilience of the superior frontal and precentral convolutions there is no difference. Floor of 4th ventricle smooth. Cerebellum soft throughout.

Basal Vessels.—Thin and delicate.

Anatomical Diagnoses.

Exhaustion of catatonia.
Multiple superficial ecchymoses.
Congestion of diploe in parietal regions.

Cultures.

Heart.—No growth in agar at 48 hrs.
Spleen.—No growth in agar at 48 hrs.
Liver.—No growth in agar at 48 hrs.

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MICROSCOPICAL EXAMINATION.—TRUNK.

SHARLACH R. STAIN.

Heart.—No intrafibrillar fat.

Spleen.—No fat.

Liver.—Moderate amount of fat in small and large droplets at the peripheries of the lobules.

Kidney.—Marked diffuse pink staining throughout both cortex and medulla. No definite droplets.

EOSIN METHYLENE BLUE STAIN.

Heart.—Pericardium delicate. Moderate layer of fat spaces. Endocardium thin. Muscle fibres well formed and well stained. No perinuclear pigmentation or vacuolization. No excess of fibrous tissue. Vessels normal.

Lungs.—Alveolar walls thin and delicate. Some of the capillaries show a moderate engorgement. The alveoli contain a few desquamated epithelial cells but no exudate.

Spleen.—Capsule of moderate thickness. Pulp shows very marked congestion. Vessels normal.

Liver.—Capsule thin. Capillaries markedly engorged. Moderate number of small fat vacuoles chiefly in cells at peripheries of lobules. In some of the areas where the congestion is intense there is some narrowing and slight fragmentation of the cell columns. No increase in connective tissue.

Large Intestine.—The more superficial parts of the mucosa show fragmentation and a very faint staining reaction and contain myriads of bacteria of several sorts. There is however no reactive exudate in the subjacent layers. (Change is probably post-mortem disintegration.)

Pancreas.—For the most part the cells of the pancreatic acini preserve the normal outline and show a relatively normal staining reaction though many of them give evidence of a granular eosinophilic change of minor grade. In a few small areas this autolytic change is more advanced and the cell arrangement is lost, leaving only a scattered group of nuclei with fragments of protoplasm. The islands of Langerhans are apparently normal. Ducts and vessels normal. No increase in connective tissue.

Kidneys.—Capsule thin and delicate. Cortical epithelial cells are somewhat swollen, very finely granular and in places a little fragmented. The cortical and glomerular capillaries are engorged. Glomeruli otherwise negative. Pyramidal tubular epithelium well preserved. Capillaries in medulla engorged.

Adrenals.—Capillaries markedly engorged. The cells of middle zone of the cortex show a very marked vacuolization. The deeper cortical cells contain a very large amount of pigment which is in a very finely divided state.

Uterus.—Mucosa and vaginal epithelium normal. In a few small areas the muscle fibers are a more glistening pink than normal, and rather sparsely supplied with nuclei giving the appearance of an early hyaline change.

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Fallopian Tube.—Pattern intricate. Villi delicate. Vessels engorged. No exudate. This specimen also includes a section of a hydatid which appears as a thin walled cyst with a fibro-muscular coat lined with a slightly flattened cuboidal epithelium.

Ovaries.—Contain a rather small number of primitive ova. Several corpora lutea in various stages. The cysts are simple and in addition to detached fragments of epithelium contain only fine granular pink staining debris.

Thyroid.—Alveoli moderately well filled with colloid. Ratio of colloid to epithelium about normal. Epithelium not flattened. No evidence of inflammatory exudate.

Pituitary.—Capillaries engorged. Acidophilic cells of the glandular portion are in rather higher proportion than usual. In a number of places the epithelium of the acini seems to have undergone a change resulting in a marked enlargement of the cell body which takes on a finely granular neutrophilic appearance. Their nuclei are for the most part pyknotic though here and there a large vesicular nucleus is visible and occasionally one with a gigantic nucleus. These cells as a rule occupy one acinus or group of acini but in some places they can be seen interspersed with the two normal types in the same gland. There are a few small cysts along the line between the nervous and glandular portion. The nervous portion shows nothing unusual.

MICROSCOPICAL DIAGNOSIS.

Widespread venous and capillary engorgement.
Slight post-mortem change in intestines.
Simple ovarian cysts.
Slight post-mortem autolysis in pancreas.

The brain was preserved *in toto* in 10 per cent formalin. The gyral pattern is one of moderate intricacy.

RIGHT HEMISPHERE.

In general it may be said that the arrangement of gyri and sulci of this hemisphere is well within the normal variations. Both the precentral and postcentral gyri are interrupted by shallow sulci. There is a sulcus of moderate length arising from the lower arm of the terminal bifurcation of the parieto-occipital sulcus and running downward and backward across about two-thirds of the lateral aspect of the occipital pole thus corresponding in part with the position of the so-called Affenspalte. The precentral sulcus follows the common arrangement of separate superior middle and inferior divisions. The postcentral sulcus is not represented by either inferior or superior divisions while the sulcus in the position

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of the middle division gives rise to the ramus horizontalis of the interparietal, thus suggesting that it in reality is made up of the rami ascendens and descendens of the interparietal and that the postcentral sulcus is absent, an unusual though by no means rare arrangement. The point where the common calcarine trunk divides into the calcarine and parieto-occipital is high, and the angle of divergence between these two sulci is more acute than usual, giving a rather small and narrow cuneus.

Left Hemisphere.

As on the right both the precentral and postcentral gyri are interrupted. The superior and middle divisions of the precentral sulcus are confluent. The two arms of the interparietal on this side also take the place of the middle division of the postcentral sulcus. This hemisphere, however, shows short sulci occupying the positions of the inferior and superior divisions. The ramus ascendens of the interparietal has a more forward trend than usual so that its extremity reaches almost to the rolandic. The point of division of the calcarine trunk is not so high on this side and the angle between the parieto-occipital and calcarine less acute so that the cuneus has more its usual shape and size.

The microscopic examination of the brain has been carried out along several lines. Sections for study by a variety of methods were taken from 30 different areas of one hemisphere.

For the stratigraphic review of the various cortex types paraffin sections cut at 10μ on a Bausch and Lomb Minot Automatic Precision Microtome and stained in toluidin blue or in thionin were employed. Similar sections stained by Mallory's original neuroglia stain (picric acid and ammonium bichromate mordanting and phosphotungstic acid hæmatein staining), were used for the display of the neuroglia fibers. The Bielchowsky silver method was applied both by the block and section technique. One set were stained by the Herxheimer method for the study of the Sharlach stainable lipoids. Alzheimer's methods IV and VI were used for the study of the ameboid glia cells. The first of these methods, *i. e.*, frozen sections from blocks mordanted in Weigert's glia mordant and stained in a weak solution of Mallory's phosphomolybdic acid hæmatoxylin has proven the better for a study of the neurophagic glia cells of the cortex while the second method has given the better pictures of the ameboid forms in the white matter.

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The areas from which blocks were taken for study were as follows:

Block.	Area.
1.	Motor cortex. Leg area.
2.	Motor cortex. Arm area.
3.	Motor cortex. Face area.
4.	First frontal gyrus. Frontal field.
5.	First frontal gyrus. Fronto-prefrontal field.
6.	Second frontal gyrus. Frontal field.
7.	Second frontal gyrus. Fronto-prefrontal field.
8.	Frontal pole.
9.	Third frontal gyrus. Near Anterior Sylvian.
10.	Postcentral opposite No. 1.
11.	Postcentral opposite No. 2.
12.	Postcentral opposite No. 3.
13.	Parietal cortex. Above interparietal sulcus.
14.	Parietal cortex. Mesial surface.
15.	Second temporal gyrus. Posterior end.
16.	Second temporal gyrus. Anterior end.
17.	First temporal gyrus. Anterior end.
18.	First temporal gyrus. Posterior end.
19.	Transverse temporal gyri. Auditosensory field.
20.	Third temporal gyrus. Middle.
21.	Occipital cortex. Lateral surface. Visuopsychic field.
22.	Occipital cortex. Lateral surface. Visuopsychic field.
23.	Occipital cortex. Inferior surface. Visuopsychic field.
24.	Occipital cortex. Mesial surface. Visuopsychic field.
25.	Occipital cortex. Beneath common calcarine trunk.
26.	Occipital cortex. Middle of cuneus.
27.	Occipital cortex. Below angle of cuneus.
28.	Hippocampal cortex. Behind peduncle.
29.	Cornu Ammonis. Beneath No. 28.
30.	Frontal pole orbital surface.

In addition to these areas material was examined from various parts of each half of the cerebellum and from the vermis, from both red nuclei, from both dentate nuclei, from two levels of the medulla and from six levels of the cord, while the condition of the Betz cells was studied by several methods in sections from 12 areas in addition to those listed.

Toluidin Blue and Thionin Stains.

Precentral Cortex.—(Sects. 1, 2 and 3.) The cells for the most part are well formed though some are a trifle too angular and show

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evidence of slight shrinkage. (Formalin fixation?) The majority of the cells have taken the stain well and show a good complement of Nissl bodies. As the deeper cell layers are reached, however, an occasional large pyramidal cell is encountered which shows marked lessening in its content of tigroid bodies giving it a pale blue washed out appearance. Among the Betz cells this condition is widespread. In a count of 2000 cells conforming in size, morphology and position to the Betz type from sections taken from 15 different areas of the motor cortex of both sides, only seven cells were met which contained any Nissl bodies, while in these the content was low and the individual granules small. The condition of the cells of this type is a variable one, but the essential features group themselves to a considerable extent in accord with the fatigue processes in nerve cells as described and illustrated by various observers. In other particulars, however, this apparent similarity to the cell changes resultant on fatigue is not so apt. The writer has been able to find no mention of granular deposits in the protoplasm of nerve cells after excessive stimulation while in a number of the cells of the present study this factor is a fairly prominent one.

In both toluidin blue and thionin preparations of these cells this type of granule appears as a faint yellowish or greenish stippling of a fairly sharply demarcated area of the cell body or as larger regular spherical masses of much the same color and similar clustered distribution. Comparative studies of these granules show that they do not stain by the osmic acid nor Sharlach R. methods for fat, and that they are not fuchsinophilic in the osmic-acid-lichtgrün-acid-fuchsin preparations (Alzheimer's Method VI), and that in the dilute phosphomolybdic acid hæmatoxylin stain (Alzheimer's Method IV) they stand out clearly as darker granules on a comparatively homogeneous background.

Omitting, however, for the moment this granule content, if one compares the appearance of the Betz cells with the description of fatigued nerve cells all the characteristic stages, progressive loss of Nissl bodies and of the chromatin content of the nucleus and nucleolus, together with shrinkage and distortion of the nuclear outline, are easily recognized. Plate I. It seems probable that these steps of degeneration or at least deterioration may be common to both fatigue and disease processes and yet the finding here of a

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fatigue-like picture in the motor cortical cells when coupled with the extreme motor restlessness before death is interesting.

So far this description has dealt with the Betz cells and while they show the changes in greater or less degree in every cell observed, the condition is by no means confined to these elements, as here and there throughout both the internal and external layer of large pyramidals are to be seen large and small pyramids which exhibit a very similar picture. Here, however, the action is by no means so widespread, as approximately only one cell in three or four of this type is affected. The granule content of these cells is by no means so prominent as in the case of the Betz cells, though an occasional cell is seen containing similar granules. Many of the cells of these laminæ show a breaking up of the cell outline with shrinking and vacuolization of the protoplasm not found in the larger cells.

In the cells of the more superficial layers and in the fusiform layer the staining reaction is much more normal though even here an occasional cell with very faint protoplasm and even fainter nucleus bespeaks a condition of things like that described above. There is a moderately definite satellite reaction in the lower cell layers though nowhere excessive in this type of cortex.

Postcentral Cortex.—(Sects. 10, 11 and 12.) Here again scattered elements throughout all layers show the same grades of alteration, but the total number of affected cells of this cortex is much less than that of the foregoing and it is noticeable that the giant cells of the internal layer of large pyramids—the stratigraphic and morphologic homologues of the Betz cells—are comparatively free from alteration of any kind and for the most part are well equipped with tigroid bodies. The satellite content of this cortex is definitely less than in the precentral.

Frontal Cortex.—(Sects. 4 to 9 inclusive.) This group of sections covers a wide field and several kinds of cortex arrangement but their characteristics are such that for this description they may be grouped together. In all there is a considerable number of cells giving the same washed-out appearance as those in the former cortices. Counts of considerable numbers of cells indicate that about one in four or five of the large pyramids and one in three of the smaller cells have suffered. This is a reversal of the order found in the precentral and postcentral gyri where the larger cells

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were more frequently altered. Here again the lower layers show a moderate satellite reaction.

Parietal Cortex.—(Sects. 13 and 14.) The sections from this area show a very much more normal appearance than any of the foregoing. The results of the chromolytic process can be seen in some cells and the lower layers show a slightly greater number of satellites than would be considered normal but on the whole the cortex is in good condition.

Temporal Cortex.—(Sects. 15 to 20 inclusive.) Here again several cortices may be grouped for description. As a group these may be well compared with the postcentral. Chromolysis is in evidence in many cells—more noticeably the larger pyramids and to a less extent in the smaller. In section No. 19 which is taken from the transverse temporal gyri of Heschl, *i. e.*, the audito-sensory field, especial attention was paid to the characteristic giant pyramids of the external layer of large pyramids. These cells while not of the same layer as the Betz cells and giant pyramids of the postcentral cortex may yet by reason of their distribution and size be considered cells of a specialized function. Among them chromolysis is found, but by no means with the same frequency as in the Betz cells. A count of 100 cells has yielded a ratio of one faded cell to four and one-half more nearly normal.

Occipital Cortex.—(Sects. 21 to 27 inclusive.) In sections of both visuopsychic and visuosensory type the changes are advanced. In both, the large cells have suffered almost exclusively. In the visuopsychic type the larger elements of the external layer of large pyramids and in the calcarine cortex the solitary cells of Meynert show changes which while not involving all cells of these two types and not excluding other smaller cells yet compare aptly with the widespread changes found in the Betz cells.

Hippocampal Cortex and Cornu Ammonia.—(Sects. 28 and 29.) These two cortices have suffered in a much less marked degree than any of the foregoing. In both there are occasional cells showing the same faded-out appearance but they are few in number. The cornu ammonis, however, shows a fairly well-marked satellite cell reaction. The cells of the red nuclei and of the nuclei of the medulla are for the most part well-preserved and well-stained. An occasional faint washed-out cell is seen in the medullary nuclei but their number is very small when compared

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with cells showing the same type of change in the cortex. Special attention paid to the motor nuclei of medulla failed to reveal any greater number there than in other cell clusters. The Purkinje cells of the cerebellum and the cells of the dentate nuclei are likewise approximately normal in their reaction to the stain. The anterior horn cells of the spinal cord (4 levels) have also received special notice on account of the changes above noted in the cells of the upper motor neurone. Here again the cells are well formed and contain well stained Nissl bodies in good numbers. Many of the larger cells of the anterior horns show considerable lipochrome pigment.

Sections stained by the Marchi method have been taken from four areas of motor cortex on each side with blocks for comparison from frontal, parietal, superior temporal and calcarine cortices.

In all sections the most striking feature is the accumulation of small blackened droplets around the vessels. Almost every small vessel in the white matter and many of those in the cortex is surrounded by a greater or less number of small black spherical drops. Some of the larger vessels also show droplets but by no means in as large quantities or as constantly as the smaller.

In the ganglion cells there are many very minute droplets, generally with a diffuse or supranuclear arrangement such as that found in the Herxheimer preparations. It is noticeable here, however, that the Betz cells are almost entirely free of stained material and that the clumps corresponding to the yellowish granules described under the thionin and pictured in Plate I, Figs. C and D, had failed to reduce the osmium.

There are scattered throughout the white matter a few individual fibers which have blackened to a greater or less degree but their number is small and is apparently no greater in the motor cortex than in the other cortices used as controls. Their total number in the subcortical white matter of the motor cortex is not as great as would be expected were they the degenerated axone sheaths arising from the Betz cells.

In those sections of this series examined with a carbol-fuchsin counter stain, the Betz cells show the same condition of faint colorability noted in the thionin specimens while in those by the Marchi method without a counter stain they can scarcely be identified.

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Phosphotungstic Acid Hæmatoxylin Stain.

The neuroglia fibril content of the various cortices may be readily grouped together in one description. The surface mat is everywhere thin and delicate and made up of a loose meshed network of very fine fibrils with no undue extension into the zonal layer. No deep cortical or perivascular foci of increase of fibers were observable.

Bielchowsky Silver Stain.

The intensity of the reaction to the silver stain is very varied and apparently closely parallels the colorability by the thionin stain. In no cell were there any swollen deeply stained fibrils of the Alzheimer type of alteration. The lack of fibers on the other hand in many cells is noticeable. A negative picture of this sort by the silver methods does not of course carry the weight of a positive result and yet the findings seem to warrant inclusion here. In all the cortices many cells can be found with an abundant supply of delicate intracellular fibrils but associated with these are other cells in which the fibrils are much reduced in number or entirely absent and their occurrence in various fields parallels quite closely the number of cells which reacted abnormally to the thionin and toluidin blue stains.

Herxheimer Stain.

Sharlach stainable substances are scattered throughout many ganglion cells of the cortex and in many of the glia cells as well. In addition many accumulations of large lipoid droplets in cells collected in perivascular spaces were noted. Almost without exception the stained droplets in the pyramidal cells are small and scattered widely throughout the protoplasm. In many there is a tendency toward accumulation in a supranuclear position which is in contrast to the basal clumps found in the cells in senile conditions. The droplets in the neuroglia cells are noticeably larger but uniform while those in phagocytic cells of the perivascular spaces are variable, but all much greater in size than either of the foregoing. Figs. 5 and 6, Plate II, give an idea of the relative size of the lipoid droplets. The ganglion cell with an associated ameboid glia cell is from the internal layer of large pyramidal cells of the first frontal gyrus orbital surface (Sect. No. 30), and the vessel

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is from subcortical white matter of the hippocampal gyrus (Sect. No. 28).

Examination as to the comparative intensity of reaction in the various areas has yielded little. No one area nor any particular group of cells seems to have suffered in disproportionate degree. In all cortices cells of every size can be seen showing similar changes though the larger cells by reason of their size show the droplets to better advantage. The large majority of cells of all types show no Sharlach reaction but in almost any high power field may be seen one or more cells which show a stippling in greater or less degree. Similarly the glia cells are for the most part free of droplets. In cells of this type, however, it is distinctly noticeable that those in close association with either ganglion cells containing droplets or vessels with droplets in the surrounding spaces are more apt to contain lipoids than those not so associated. Especially is this true of the group of glia cells which are not producing fibers, and which by their relatively large though difficultly stainable supply of protoplasm and by their peculiar shape group themselves with the ameboid glia cells of Alzheimer. The cell in Fig. 5, Plate II, at the base of the pyramid is of this type. The fat-packed cells in the perivascular space in Fig. 6, Plate II, are probably cells of mesodermal origin and the writer is inclined to group them with the endothelioid phagocyte type. Their content of fat as may be seen from the illustration is large in quantity and in large droplets and it is readily noticeable that cells of this type and in this position are the only ones where accumulations of like size and quantity occur.

Alzheimer's Methods IV and VI.

These two technical procedures have been used for the study of the ameboid neuroglia cells. At the time of the beginning of this study the writer was unfamiliar with either method and the results while positive in most areas were not of sufficient constancy to allow of much deduction concerning the comparative numbers of these forms in various fields. In the description of the thionin preparation brief mention is made in several cortices to the presence of satellite cells in greater or less numbers, and in general it may be said that these areas were most fruitful in the search for the type of satellite which includes the neurophage, and which by reason of the production of a variety of pathological

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granules occurring in its protoplasm have been included by Alzheimer with the ameboid neuroglia cells. In all cortices these cells could be found closely approximated to the pyramids and frequently lying in lacunæ of the ganglion cell protoplasm. Their number is not great but their size, position and staining reactions place them unquestionably with the ameboid glia cells. By the dilute phosphomolybdic acid hæmatoxylin stain they show as a rather dense nucleus surrounded by a poorly defined and not very sharply stained protoplasm, which is generally homogeneous or very finely granular in appearance though frequently stippled with coarse granules, taking a more intense stain than the matrix in which they lie. By the light-green-acid-fuchsin stain the protoplasm is a pale green, the chromatic particles of the nucleus dark green. Scattered through the light green protoplasm are granules of bright red and occasionally of dark green—the fuchsinophile and licht-grün granules. By the thionin stain the outlines of these cells are very faint and frequently indiscernible, but the granules which take the blue stain are frequently seen grouped around an otherwise barren nucleus. Fig. 4, Plate II, shows an ameboid glia cell applied to the body of a pyramid and in the protoplasm of each may be seen numerous fuchsinophile granules. The protoplasm of the glia cell is here not coextensive with the distribution of the granules giving the impression of a destruction of cell body with escape of the granules.

In the subcortical white matter and especially in those layers immediately beneath the cortex these methods showed the most widespread changes. Alzheimer has given the name "füllkörperchen" to the queer mosaic-like bodies brought out in great numbers in proper materials by special methods. From his illustrations one receives the impression that these bodies are fairly sharply outlined. In the present instance not many such figures could be made out, for though the white matter is packed with abnormal materials they do not stand out as the sharply marginate angular mosaics which Alzheimer pictures. Instead of these the field is filled with very finely granular or almost homogeneous pale green material, bearing many fine fuchsinophile granules, wedging apart the nerve fibers and with or without visible association with a nucleus of the glia cell type. In most places they appeared merely as irregular masses lying in the tissues, though in sections which had fortunately passed through the proper plane their association

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with nuclei was readily visible. Fig. 1, Plate II, shows two of these large ameboid glia cells with their nuclei and a third mass apparently not attached to either of the others. This third mass is the type of the material found so abundantly, and the writer considers it merely a protoplasmic extension either from one of the two cells illustrated or from an adjacent cell whose nucleus lies in a different plane. The lower of the two nucleated masses has surrounded a small capillary. In a few areas small groups of typical angular "füllkörperchen" were seen, but for the most part the filling material has the exact appearance of the bodies of the ameboid glia cells. The large bizarre ameba-like forms are found throughout the white matter but around the vessels are frequently seen forms containing inclusions of a greater variety. Fig. 2, Plate II, shows a large glia cell with its nucleus in its upper pole and its lower pole wrapped partly around a vessel. Near the vessel in the protoplasm may be seen a cluster of fuchsinophile granules while just below the nucleus are three small brown segmentally marked bodies to which the name "lipoid cystchen" has been given. These forms were few in number. Fig. 3, Plate II shows two ameboid glia cells about a small vessel. The smaller contains fuchsinophile granules while the larger shows a number of larger masses which have blackened with the osmic acid. Fig. 1 is from the white matter of the hippocampal gyrus. Fig. 2 is from the subcortical white matter of the anterior end of the second temporal gyrus. Fig. 3 is from the first frontal gyrus in the frontal field. Fig. 4 is from the first frontal gyrus on the frontal pole. The amount of material infiltrating between the fibers of the white matter is in many places tremendous and in all areas is large. The material from the hippocampal cortex (Sect. No. 28) gave the most intense reaction. Here were areas of subcortical white matter in which an oil immersion field would contain only three or four fibers, showing a normal appearance, while all the remainder of the field was made up of masses of the pale green protoplasm and fuchsinophile granules of the cell bodies of ameboid glia cells with an occasional nucleus. In those areas showing the lightest reaction possibly three-fourths of the normal fiber content remains but even here they are wedged apart by similar protoplasmic masses. The distribution throughout the cortex was rather irregular, as a reaction of marked intensity in one convolution even of the same field might be found to be contrasted with a very much lighter

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reaction in a convolution immediately adjacent and of the same cortex type, so that no conclusion as to the distribution of the lesions could be drawn.

Discussion of Findings.

From the clinical standpoint the diagnosis of the case is far from satisfactory in that the time of observation was so short and that the conditions of motor restlessness and mutism precluded much examination. The facts as given, however, would seem to warrant placing the case in the dementia præcox group—catatonic form. The death resulting after so short a course and without demonstrable anatomical changes places this case among those of most value for careful histological examination.

The chromatolysis so constant in the Betz cells is quite comparable to that occurring experimentally after extreme fatigue of the nerve cells. That this picture can be considered diagnostic of fatigue is, however, by no means so certain, as many acute disease conditions, *e. g.*, infectious delirium yield pictures of a very similar sort though as a rule more universal in distribution. Bearing in mind that the autopsy was performed 25 hours post mortem it would be hazardous to state emphatically that this change is an ante mortem one. However in reviewing the microscopic findings in the trunk one finds the post mortem changes to be rather small in amount and of minor grade. In the intestine there is evidence of disintegration of the superficial layers of the mucosa, but even here it is scarcely more marked than is occasionally seen in cases of slow disorganization and lingering death examined only a few hours post mortem. Again the kidney changes suggest disintegration in the condition of the cortical tubular epithelium. The pancreas which is one of the earliest indices of post mortem alteration shows it is true a certain amount of change, but it is by no means widespread or very advanced. The cultures show that there had been no widespread bacterial invasion by the easily grown saprophytes at least. On the whole the microscopic picture of the trunk organs shows a remarkably good state of preservation at this length of time after death. The cell changes are sharp and clear cut, the edges of the cells sharply marginate and the line of the nuclear membrane a distinct one giving a picture very different from the ordinary mussy fragmented appearance of post mortem changes. The type of staining reaction

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seems to indicate loss chiefly of the stainable materials of both cell body and nucleus and in the more advanced stages in the nucleolus as well. This lack of staining power is in evidence not only by the thionin but by the hematoxylin in the Herxheimer method; the licht-grün by Alzheimer's Method VI, and the phosphomolybdic acid hematin Method IV. Again the granules of yellowish color described in the thionin stain speak rather for an active alteration than a passive destruction. These granules as has been mentioned above do not stain by the osmic acid or Sharlach R. methods (though their grouping is that of the basal clumps of lipoids) and take a darker stain than the surrounding protoplasm in the phosphomolybdic acid hematin and are not fuchsinophilic. In some particulars the change is similar to Nissl's Schwere zellerkrankung, but the nucleolus tends to hold its central position in the nucleus and does not sink to the bottom as Nissl describes. Again it is hard to explain why if the change is a post mortem one it should be so constant in the Betz cells while the giant cells of the postcentral cortex, morphologically and stratigraphically similar, are so comparatively free from change. Still more striking is the fact of severe change in certain cells with practically normal immediate neighbors. Considering all points the opinion seems justifiable that the change is not a post mortem one though as stated before an emphatic statement is not permissible. Similar cases in which less time has elapsed between the time of death and the time of autopsy may aid in explanation.

The Marchi preparations yielded nothing of note in regard to degenerated fiber sheaths though this method brings out well the accumulations of lipoid materials around the vessels.

The entire lack of fibrillar gliosis, as evidenced in sections stained by Mallory's phosphotungstic acid hematin after mordanting in ammonium bichromate and picric acid, reveals a lack of reaction on the part of the fibre forming glia elements which is rather to be expected in the course of the disease process in question.

In the Bielchowsky preparations the main variation was one of loss of fibrils and a negative picture in this stain does not carry much weight.

The evidence gained by the Herxheimer method is, however, of much more positive type. While it seems possible that fermentative activity might serve to produce Sharlach stainable lipoids by the breaking down of the normal lipoid materials of the central nerv-

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ous system, yet their occurrence in the ganglion cells, glia cells and adventitial phagocytes certainly points to changes which were occurring during life. It is noticeable that the fat droplets in the protoplasm of the ganglion cells are very small and of a distribution different from the fatty changes noted in cells of senile and other long standing processes. The glia cells containing fat are all of the ameboid type or their close analogues and the contained droplets while fairly uniform are larger than those in the ganglion cells. In the phagocytes the droplets are large and close packed. The pictures as a whole suggest the explanation advanced by Merzbacher, Marchand, Held, Lugaro and others that these ameboid types are cells whose activity is directed toward collecting, elaborating and transporting products of degeneration of the nerve cells. The question as to whether these cells should be classed as neuroglial elements as held by the above-mentioned authors or are mesodermal elements need not be discussed here. The fact of their presence and activity leaves little doubt of the ante mortem existence of a widespread and acute disease condition.

The series of sections stained by Alzheimer's Methods IV and VI have yielded the most abundant evidence of alterations. The number of the cortical ameboid glia cells is not enormous though these cells alone bespeak an active process. In the subcortical white matter, however, the picture is that of an intense reaction on the part of these cells. The small number of füllkörperchen may possibly be explained on the ground of the acute stage of the process if Alzheimer's view that these bodies are products of the breaking down of ameboid glia cells be correct.

It must be remembered that findings of this type are of value only in such cases as terminate fatally *during the acute stage without serious concurrent physical ailments.* The presence of an associated septic process in the body beclouds the picture by the injection of another reasonable cause for such changes, while on the other hand all or at least the majority of the traces of alterations may have disappeared during the course of a chronic case. Alzheimer states this thus: "The ameboid glia cells are short lived and the pathological materials which they produce in the nerve tissues disappear in a proportionately shorter time than they themselves. When for example a storm of katatonic changes has swept through the cortex there is soon no more to be seen of the singular glia cells and pathological granules. So we find very

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different pictures when we investigate acute and chronic stages of the same disease and meet on the other hand findings of broad likeness in very different diseases if they represent a similar intensity of the disease process."

Résumé.

1. The case under examination is one of a psychosis of acute onset followed by death within 15 days and showing at autopsy neither gross nor microscopic visceral alterations of sufficient intensity to be regarded as factors in the disease or causes of death.

2. Clinically the diagnosis is not definite on account of the short time of observation and the condition of the patient but the limited data place it probably as a case of dementia præcox of the katatonic form.

3. Sections stained with thionin and by the Bielchowsky method yielded findings which might be the result of post mortem disintegration, but which in the case of the thionin specimens at least were probably ante mortem in occurrence.

4. In specimens stained by the Herxheimer and osmic acid methods considerable amounts of lipoid materials were found in the ganglion cells, glia cells and phagocyte cells of the perivascular spaces.

5. By Alzheimer's Methods IV and VI ameboid glia cells with a variety of granules are found widely scattered throughout the brain in the lower layers of the cortex and particularly in the subcortical white matter.

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Plate I.

Fig. A shows a Betz cell with a reduction in number and size of the tigroid bodies and faint staining reaction of its protoplasm, as contrasted with two smaller adjacent more normal cells. At its base is a neurophage with granules in the protoplasm.

Fig. B shows a Betz cell with no demonstrable tigroid masses showing loss also of chromatin from the nucleus.

Fig. C shows a Betz cell with no demonstrable tigroid masses showing a similar loss of nuclear chromatin and basal pigmentation. This cell also shows two neurophages and a number of nuclei of satellite cells.

Fig. D shows a Betz cell similar to Fig. C, but showing in addition marked shrinkage of the nucleus.

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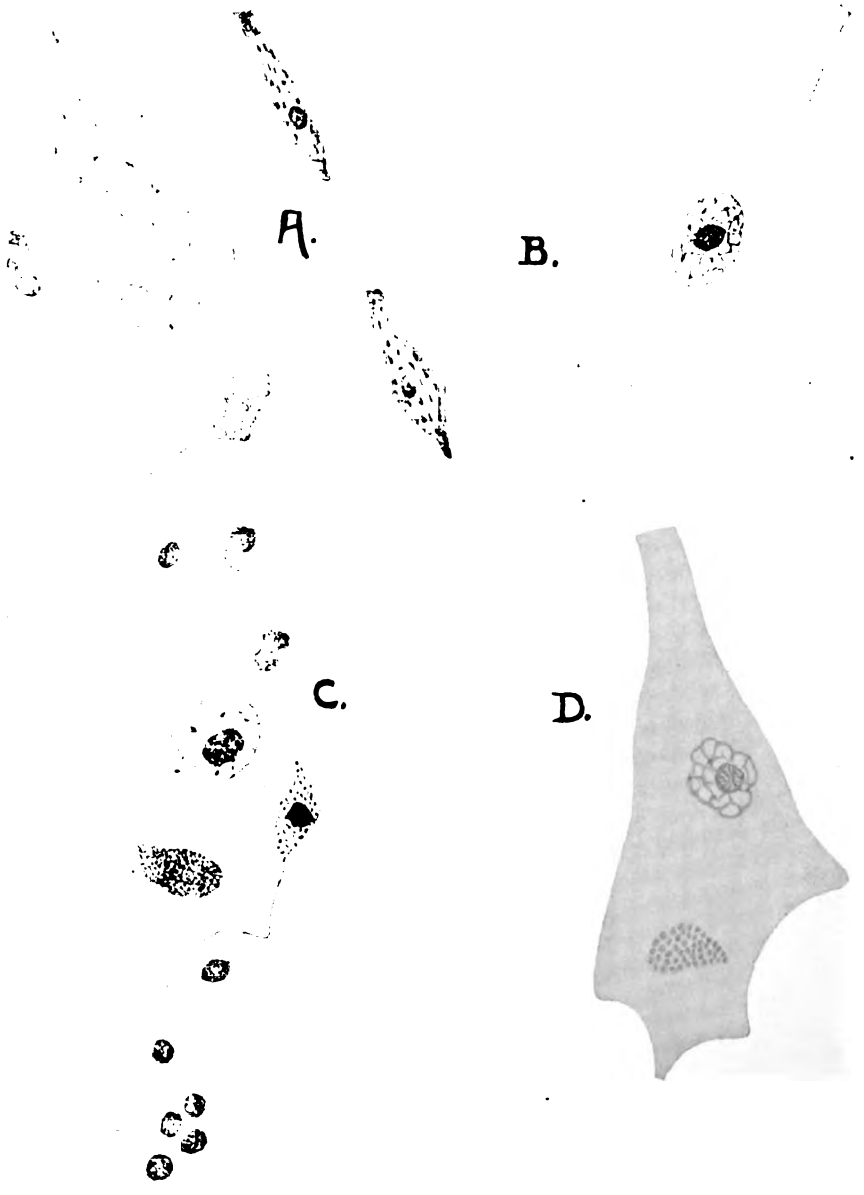

PLATE I.

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Plate II.

Figs. 1, 2, 3 and 4 are from osmic-acid-licht-grün-acid-fuchsin preparations.

Fig. 1 shows two ameboid glia cells with a portion of the protoplasm of a third from the subcortical white matter. The lower of the three surrounds a capillary.

Fig. 2 shows an ameboid glia cell with three "lipoid cystchen" and a cluster of fuchsinophile granules in close association with a capillary vessel.

Fig. 3 shows two ameboid glia cells, one containing fuchsinophile granules, the other containing large granules of lipoid material which have been blackened by osmic acid.

Fig. 4 shows a neurophage in apposition to a pyramidal cell which in turn shows degeneration of its nucleus and fuchsinophile granules of its apex. The neurophage also shows fuchsinophile granulations.

Fig. 5 is from Herxheimer preparations showing fine lipoid stippling of the protoplasm of the ganglion cells with large lipoid droplets in the body of a neurophage.

Fig. 6 shows a vessel with several fat containing phagocytes in the perivascular spaces.

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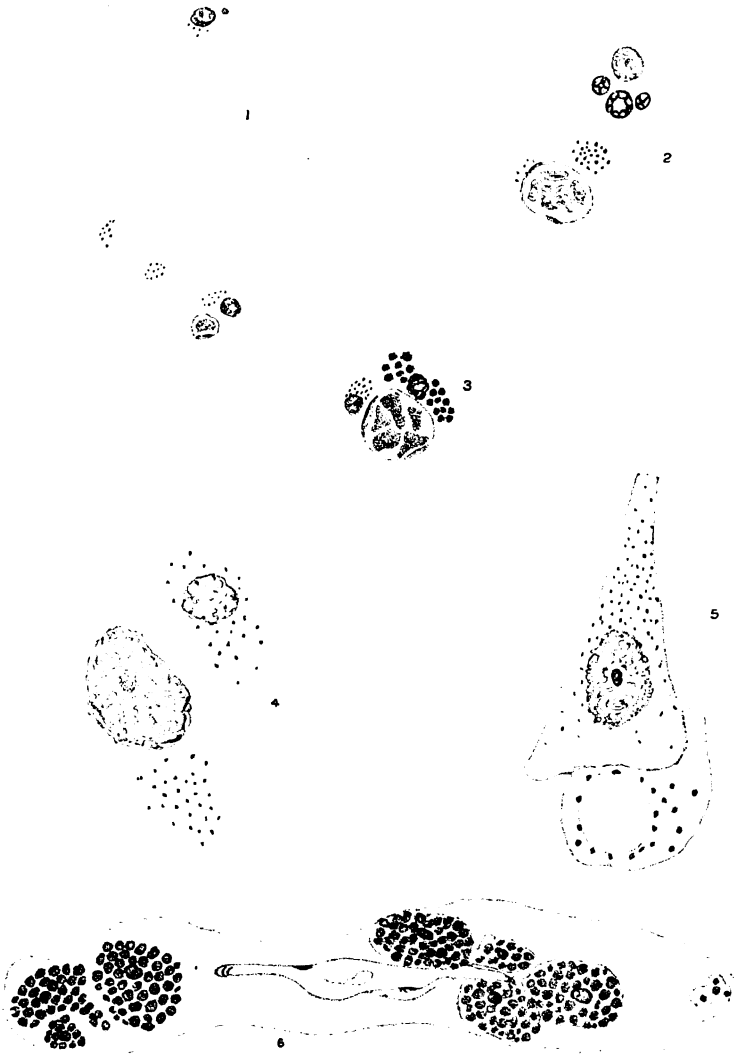

PLATE II.

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A SERIES OF NORMAL LOOKING BRAINS IN PSYCHOPATHIC SUBJECTS.*

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(From the Laboratory of the Worcester State Hospital, Worcester, Massachusetts.)

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I. Introductory Note.

When it was deemed wise to mark the end of an era at the Worcester State Hospital by the collection of certain papers illustrating both work going on at Worcester and work by former

* This paper forms contribution number eleven of the Worcester State Hospital (Mass.), Series of 1912, offered in compliment to Dr. Hosea Mason Quinby on the event of his retirement from the Superintendency after 20 years of service.

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Worcester-trained men, I felt a desire to contribute something, not on the score of Worcester training to which I can lay no claim, but rather in the line of illustrating the value of careful scientific records and routine as carried on in a great state institution for the insane. Latterly, as pathologist to the Massachusetts Board of Insanity, I had enjoyed a certain supervision over the scientific side of the institution in the hands of my friend and colleague, Dr. S. T. Orton, pathologist to the Worcester State Hospital, and had become familiar with his and prior records, including those of Professor Adolf Meyer. I, therefore, conceived it to be of interest to study, in a large series of data from a fresh source, unbiased by any presuppositions of my own, *the problem of normal brains in subjects of mental disease.*

II. The Problem of Normal Brains in Mental Disease.

The practice of psychiatry outruns theory in one respect. For the practice of psychiatry recognizes that at least some victims of mental disease have normal brains. Psychiatric theory, on the other hand, is prone to say, *insanity is brain disease;* for, even if normal to all appearance, the brains of insane subjects must contain somewhere some theoretically demonstrable sign of disease.

I grant that it is desirable to investigate the brains of insane subjects *as if* their neurones were diseased. I should assert, without fear of contradiction, that no human brain has yet been examined, whether of insane or other subjects, with such thoroughness as to permit the statement, *this brain is quite normal.* I am even of opinion that, especially on the receptive side of the apparatus, few brains have been studied thoroughly enough with available technical methods.

But it can only be the rational part to *consider brains normal until proved not so.*

In my study, since 1906, of Danvers State Hospital brain material, I have focussed all attention on the problem of normal brains in mental disease. It is, strictly speaking, not easy to find a normal brain at autopsy, at all events in insane hospitals. It is also, despite the negativity of routine reports, not easy to find a normal brain in general hospital material, and it is especially difficult in medicolegal material.

There, however, enters the person of the examiner. Few

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general pathologists have had a thorough training in neuropathology, despite the fact that few other fields are so rich in recorded knowledge and in promise of knowledge. But a blind spot for the nervous system is cultivated by the pathologists, who proclaim their neurological ignorance with a pride almost fierce. Cornered they are prone to say that "so little definite is known," etc. All of which implies a complementary confidence in what *is* known concerning heart, liver, lung and kidney, which is astonishing. The result is that many brains dismissed as normal by the general pathologists prove abnormal on later review, anatomical or histological, and the impression has gained ground that *all* brains, at least of the insane, feeble-minded, or epileptic, will prove abnormal with the best technique.

In my personal series of autopsies, performed at the Danvers State Hospital, 1906-09, I was rarely able to find a normal brain according to my own standards of normality as demonstrable at the autopsy table. In a number of instances, however, extensive dissection proved requisite for the discovery of lesions, especially those affecting other regions than the cerebral cortex (*e. g.*, thalamus, dentate nucleus of cerebellum, etc.).

The abnormalities which I found, however, I could not feel were in all instances either causes or effects of mental disease. In several crucial examples I was able to prove microscopically a more extensive but milder lesion of perhaps a different locus than the naked-eye lesion. I, therefore, began to suspect that the gross lesions found were but promises of less severe (but perhaps more significant) lesions to be revealed by the microscope.

It is a fact that any severe cortical disease of fairly long standing is likely to be registered in the form of cortical induration or atrophy, diffuse or focal, of some degree. These scleroses, or the far more frequent atrophies, are perfectly possible of recognition by the interested pathologist and afford him significant guides in his microscopic research. It may conceivably happen that the focus of gross disease is no longer active and that the "symptom-producing" lesions are elsewhere and quite invisible to the naked eye. This latter state of affairs is perhaps not infrequent in dementia præcox (lower layer cortical gliosis) and in senile conditions (plaque-formation). In any event, however, the gross lesions which we find, whether active or extinct, are strong indi-

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cators of what may be found and usually is found upon microscopic research.

Brains with gross lesions of a sclerotic or atrophic nature are at least *suspect*. We cannot divorce ourselves from the conception that the brains are in some respect *significantly* abnormal.

But what are *significant abnormalities* of the brain in mental disease? No man can confidently say. General paresis is commonly regarded as the paradigm of mental disease attended with gross lesions. Are the gross or microscopic lesions of general paresis significant abnormalities? For the present these lesions are far from explaining, with any close correlation, the particular symptoms or even the general course of general paresis. Nevertheless we are likely to believe that the lesions found are theoretically capable of explaining the symptoms.

There is one obvious but neglected feature of brain tissue reactions which helps in correlation. Let the brain disease surpass a certain limit, and destruction of cells will follow. As a result of this cell destruction, the reparative reaction of the interstitial tissues known as gliosis is virtually, with certain peculiar exceptions, certain to occur. When it occurs it is likely, as above stated, to register itself in the form of palpable induration.

But this process of induration and eventual atrophy is by no means instantaneous and probably as a rule requires many weeks to reach a degree capable of being felt with the fingers at autopsy. Consequently a number of serious brain-cell disorders will fail to be recognized by the anatomist, if the subjects have died within the early or pre-indurative period. The anatomist would perforce term such brains normal when the microscopist would readily find changes of a serious nature.

With this hasty review of the problems of gross neuropathological anatomy we can arrange a tentative *à priori* classification of the

Possible Groups of Normal-Looking Brains Found in Insane Subjects.

1. Cases of mistaken anatomical diagnosis (small and central lesions or mild diffuse induration and atrophy are frequently overlooked).

2. Cases of mistaken clinical diagnosis ("not insane" cases dying of somatic disease in the insane hospital because it would have been hazardous to remove them therefrom).

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3. Cases of mental disease of a type which usually shows structural brain disease, but which have not survived long enough to show either induration or atrophy (cases of early or very mild general paresis may show *no gross lesions but characteristic microscopic lesions,* and cases with marked fatty changes in the brain may exhibit no gross lesions in the pre-indurative period).

4. Cases of mental disease, of a type which may be conceived to exist, exhibiting neither observationally nor theoretically any brain lesion either gross or microscopic.

It is the establishment of the existence of this fourth group of *intrinsically normal brains* that psychiatric science needs for the purpose of directing research economically.

Are there mental diseases such that the brains on investigation prove in all respects structurally normal as only abnormal in that they permit or purvey the abnormal symptoms? *Can brain structures be intrinsically normal while extrinsically abnormal?*

If so, it would become curiously necessary for pathology to busy itself with *proofs of normality* rather than with proofs of abnormality in a series of structures.

III. Normal Brains at Worcester.

Of *249 cases autopsied* at Worcester State Hospital, Massachusetts, in the years 1895-1911, without the *observation* by the pathologist at the autopsy table of *gross visible or palpable lesions of the cerebral cortex,* there were (to judge by the assigned clinical diagnoses):

Senile dementia	67
Senile melancholia	7
Senile dementia with alcoholism	2
Senile paranoia	2
Senile dementia with epilepsy	1
Senile delirium	1
Total senile psychoses	80
Epileptic dementia	2
Organic dementia	1
Secondary dementia	1
Terminal dementia	1
General paresis	1
Total organic and other dementias, except dementia præcox and alcoholic psychoses	6

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Manic depressive insanity	27
Melancholia	10
Involution-melancholia	8
Involution-psychoses	2
Circular insanity	2
Anxiety psychosis	1
Stuporous melancholia	1
Agitated melancholia	1
Hypochondriacal melancholia	1
Total manic-depressive group	53
Dementia præcox	42
Paranoic conditions	14
Essential dementia	1
Total dementia præcox group	57
Alcoholic insanity	5
Alcoholic delirium	4
Alcoholic deterioration	3
Alcoholic hallucinosis	2
Alcoholic mania	1
Delirium tremens	1
Total alcoholic psychoses	16
Epileptic insanity	5
Epilepsy	4
Imbecility	4
Idiocy	2
Imbecility and epilepsy	1
Total epileptics (non-senile) and imbeciles	16
Acute delirium	6
Toxic delirium	3
Delirium	2
Total non-alcoholic deliria	11
Constitutional inferiority	3
Hysteroid insanity	1
Huntington's chorea	3
Total	7

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The separate larger groups might therefore be classified as follows, having in mind a general adherence to Kraepelinian lines:

Senile group	80
Manic-depressive group (melancholia included)	53
Dementia præcox group	57
Alcoholic group	16
Epileptic and imbecile group	16
Deliria, non-alcoholic	11
Miscellanea (hysterical insanity, Huntington's chorea, constitutional inferiority)	7
Organic dementia	6
Unrecorded	3
Total	249

GROUPS OF DEATHS IN QUARTER-CENTURIES.

	Cases
First quarter-century (actually 16-25)	18
Second	68
Third	120
Fourth (actually 76-91)	42

That there should be a group of 42 cases dying insane at ages between 76 and 91 and exhibiting intact brains on the autopsy table presents a significant problem. Many pathologists would wonder whether the brains of normal seniles should not exhibit some traces of atrophy, at all events in the higher eighties. And it would be only natural to suppose that the wear and tear of brains in the insane should lead to still greater atrophic changes.

Let us examine the assigned diagnoses in this *senile group* of subjects insane but intact of brain:

DEATHS OF INSANE WITH INTACT BRAINS, ÆT. 76-91		42
Senile dementia		32
Paranoic conditions	3	
Alcoholic conditions	2	
Imbecility	1	
Essential dementia	1	
Manic-depressive insanity	1	
Epileptic insanity	1	
Delirium	1	
Other diagnoses	—	10

Compare this with:

Deaths of insane with intact brains, *æt. 71-75*		22
Senile dementia	7	
Other diagnoses	15	

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Either there is a crisis at which the psychosis senile dementia begins to be very frequent (consistently with intact brains), somewhere about the 75th year of life, or else the *diagnosis* senile dementia begins to be made with greater frequency about this crisis.

Comparing the incidence in the two hemidecades adjacent to this crisis, we find:

7 senile dements in 22 subjects æt. 71-75
19 senile dements in 27 subjects æt. 76-80

Before dismissing the problem of normal brains in senile psychoses, it is important to consider brain weights in the series, since the difficulties of naked-eye diagnosis do not always permit a ready evaluation of brain atrophy.

		Average.
Senile psychoses, *male*	49	1289
Brain weights above "average" (1357)[1]	12	1435
Brain weights below "average" (1357)	37	
Brain weights above 1265 ÷	28	
Brain weights below 1265	21	
Senile psychoses, *female*	25	1124
Brain weights above "average" (1235)	4	1318
Brain weights below "average" (1235)	21	
Brain weights above 1112*	14	
Brain weights below 1112	11	

It is generally thought that the "averages," 1357 for male brain, 1265 for female brain, are too low, particularly in view of the fact that at least one of the component series of Vierordt's table, viz., Weisbach, 1866, includes brains with membranes removed. Accordingly it seems to be true that these cases exhibit weights too often below the "average," since almost any series of brains from general hospital material will show many cases with brains above Vierordt's "averages."

But there is stated to be a loss in brain weight varying with age. I have, therefore, tabulated these cases of senile psychoses, in

*Lowest averages assigned to Europeans (pia mater removed), Weisbach, see above.

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accordance with the *probable* brain weights for their ages (Vierordt's combined tables), following a principle first adopted in some work done with Dr. Newell B. Burns at Danvers State Hospital.[2]

By this method, calculating all brains having below 98 per cent of the probable weight as of subnormal weight, I find that 40 out of 73 cases with brain weights available show brains with less than 98 per cent of their probable weights according to age.

Adopting another arbitrary standard, once in vogue, I found four cases having weights a sixth or more less than their probable weights.

7.2 , F., 62..... $\frac{995}{1210} = .82$ (percentage of prob. wt.)

9.54, F., 71..... $\frac{970}{1170} = .83$ " " " "

9.83, M., 76..... $\frac{1010}{1290} = .78$ " " " "

10.60, F., 68..... $\frac{890}{1210} = .74$ " " " "

It may well be that these four cases should not belong in a group of "normal-looking" brains on the score of brain weight. Or we may possibly be dealing with a degree of microcephaly. In either case we should not be safe in considering these cases normal. If normal they must represent a deviation so extreme as to cause remark.

But six other cases show brain weights deviating more than 10 per cent from the average.

One of these,

$$7.53,\ \text{M.},\ 73\ldots\ldots\ldots\ldots \frac{1095}{1290} = .85,$$

may belong with the extremely low weight series, but the others all belong within a range of 12 per cent of the average and are more likely to belong accordingly among the "normal," *i. e.*, not too extreme, deviates.

My general conclusion here is that four or five cases whose brains looked "normal" to the anatomist were with a certain probability abnormal (whether morbid or merely anomalous should not be risked). I remain with the impression that gross pathological anatomy has still to prove that *senile dementia*, as

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we use the term, is attended with any considerable loss of brain substance in a large group of instances.[a]

	Total.		Abnormal.		Normal-looking.	
Worcester series	741		492		249	
Senile psychoses	176	24 %	96	20%	80	32%
Manic-depressive insanity	36	4.3%	9		27	10%
Dementia præcox	42	5.6%			42	17%

These figures betray the curious fact that there is a higher percentage of senile psychoses in the normal-brain series (32 per cent) than in the abnormal-brain series (20 per cent). Another fact of interest (though here the figures are small) is that some of the manic-depressive brains seem to have been injured so as to show gross lesions but none of the dementia præcox brains.

Next to the problem of normal brains in the senile psychoses may be set the problem of normal brains in dementia præcox. The apparent normality of the brain in dementia præcox, or, to be more exact, the lack of startling gross alterations in dementia præcox brains, has led many persons to the conception that dementia præcox is a "functional" disease, either in the sense that no structural changes *have been* found in these brains or in the sense that none *will be* found therein.

We have seen that on this ground a huge proportion of senile dementias and other psychoses could be dubbed "functional" and in part perhaps properly so termed. We have also seen that the manic-depressive group is not at all free from a large proportion of cases with brain lesions (at least at time of autopsy), so that with equal propriety it might be argued that manic-depressive insanity is *not* a functional disease.

How then shall the apparent normality of 42 brains in dementia præcox be explained?

In one case (XV, 74) my colleague, Dr. Orton, was able to resolve the question satisfactorily by showing that the case was one of "brain death" (*Hirntod*) in Alzheimer's sense; in short, that the case, though possessed of an *anatomically normal* brain had a *histologically* quite *abnormal* brain. This case is to be published elsewhere.

The above case (XV, 74) had symptoms of but 15 days duration. Upon the general principle hinted at above (in the paragraph concerning the importance of gliosis), we should not expect *gross*

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anatomical evidence of disease in a case having such a brief total duration.

As a matter of fact 20 additional cases, *i. e.*, 21 cases or 50 per cent of the dementia præcox series, were cases having an assigned duration of less than two years.

The other 50 per cent of the dementia præcox group represent cases of, as a rule, much longer duration. In fact if we omit one case with assigned onset at 42 and death at 45 (xv, 50), very possibly a case of involutional character and another case, presumably of hebephrenic type with onset at 18 and death at 23, there are no cases with duration less than eight years. There appear, then, to be two groups of cases of dementia præcox, one group with durations of less than two years and another with durations as a rule eight or more years—a group of cases with small viability and a group having greater viability. Such a distribution may well indicate a somewhat critical character to dementia præcox, a tendency to a partition of cases into those in which the organism tends to go to pieces early and those of a more durable character. Incidentally it may be remarked that of 13 cases of katatonic type, but four belong in the "durable" group. Such a distribution, should it be confirmed by larger figures, might well emphasize that which perhaps goes without saying, viz., that katatonic cases are still more critical than others of the group.

When we compare this distribution in the dementia præcox group with that for the whole group of "normal-looking" brains, we find:

	Cases of less than 2 yrs. duration.	Cases of 2–8 yrs.	Cases of more than 8 yrs.
Dementia præcox	21	1(2?)	20(19?)
Whole group	85	81	82

It would be very desirable for all workers having access to extensive series of dementia præcox cases to study them from the point of view of *duration*.

Dismissing these incidental problems for the time being, it will be well to state what interpretation can be given to the "normality" of the brains in this series of dementia præcox brains.

In the first place half of them are cases of comparatively brief duration and may not have lasted long enough to change appreciably the size, shape, or consistency of the brain.

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In the second place the analysis of these cases was not made with the knowledge of what was to be proclaimed so forcibly in later years, viz., that *dementia præcox is an organic disease.*

It will be remembered that some 86 per cent of the Danvers autopsy series of dementia præcox cases, viz., 24 out of 28 cases, were thought to possess structural lesions, either gross or microscopic.[4]

The disparity between the Worcester group and the Danvers group is at first sight striking; but it must also be remembered that, whereas 249/740 of the Worcester cases of mental disease (all types) showed normal-looking brains, only about 0.3 of the Danvers series could be safely put into that group. It is obvious, therefore, that different anatomical standards prevailed in the two laboratories. And it is especially valuable to have this statistical evidence of the degree of separation of these standards.

The question of duration is so important in the evaluation of the effect which a given disease may exert upon the brain that the whole distribution is presented, so far as it concerns 248 cases.

Duration.	Cases.			
3–12 months	26	36	85	
3–12 months	10			
1– 2 years	49	49		
2– 3 years	26	47		
3 years	21			
4 "	6	46		
5 "	9			
6 "	10			
7 "	5			
8 "	4			
9 "	8			
10 "	4			
11 "	2		127	
12 "	7			
13 "	4			
15 "	7			
16 "	6	34		
17 "	1			
18 "	3			
19 "	3			
20 "	1			

Duration.	Cases.		
21 years	1	14	25
22 "	3		
23 "	1		
24 "	3		
25 "	1		
27 "	2		
28 "	2		
30 "	1		
31 "	2	11	
32 "	3		
33 "	1		
36 "	1		
37 "	2		
38 "	1		
40 "	1		
42 "	2	5	
43 "	2		
47 "	1		
50 "	2	6	
52 "	1		
53 "	1		
55 "	1		
78 "	1		

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IV. Comparisons of the Worcester and Danvers Series of Autopsies.

The Worcester State Hospital series of autopsies in cases of mental disease, 1895-1911, numbered 740. The brains of 249 of these subjects, or about *one brain in three,* are recorded as of normal appearance on the autopsy table. A somewhat larger Danvers State Hospital series, similarly studied, had yielded something like *one brain in four* as of normal appearance in the gross.

As these *normal-looking brains* stand the best chance of corresponding with the so-called *functional* cases of *mental disease,* some effort has been spent on classifying the group from certain view-points, particularly those afforded by previous studies in the Danvers series.

Brains should perhaps be considered normal until proved abnormal, even if they belong to the subjects of mental disease. A review of the possible groups of normal-looking brains found in insane subjects leads to the supposition that there may be a certain group of such which will fail to show any lesion whatever: *there may theoretically, perhaps, exist brain-structures which, whereas* **intrinsically** *normal, are* **extrinsically** *abnormal.*

Before we arrive at a proof that such *intrinsically normal* brains can be found in psychopathic subjects, however, we must very carefully scrutinize our data.

It is well-nigh incredible that (as shown by the Worcester series) there is actually a higher percentage of senile psychoses in the normal-brain series, viz., 32 per cent, than in the abnormal-brain series, viz., 20 per cent. But a Danvers study had already shown the great variety of conditions covered even by the term senile dementia and had indicated that about one in every three so-called senile dements had a normal-looking brain. It would seem, then, that many of the senile psychoses, including a fraction of the dementias, are either functional diseases (in which the brain is intrinsically normal) or else based upon fine changes or limited changes not registered in the gross brain. The modern study of cortical "plaques" suggests a solution for at least part of this problem. In any case the facile pens which underwrite "arteriosclerosis" as a cause for everything must surely turn in some other direction.

Of course more finical search for lesions, such as diffuse or

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focal atrophies and indurations and various concealed lesions, might conceivably have altered these statistics by lowering the number of normal-looking brains. But the standard of normality also depends on the fear of attributing too great significance to minor anomalies or aplasias of the brain convolutions. To save the particular case from misinterpretation and overloading the slight apparent anomaly or lesion with too great functional consequence, the anatomist, however, is likely to throw into the normal-brain group various cases that look strange there. The general trend of psychiatry now demands proofs of normality in any brain of a psychopathic subject.

A less inevitable frailty of diagnosis is shown by these statistics in that patients over 75 years of age at onset are *far* more apt to receive the diagnosis senile dementia than those just under 75 years of age. After 75 the diagnosis senile dementia is surely too facile.

Another odd fact (at least in the writer's view, who had supposed manic-depressive insanity might prove exceedingly "functional" and to have brains only *extrinsically abnormal*) is the fact that one in four of the manic-depressive brains was in some respect grossly abnormal, whereas none of the 42 brains in dementia præcox exhibited gross abnormality. The latter finding is widely discrepant from Danvers findings in a similar series (where some 68 per cent of the series was thought to show gross cortex lesions and even 86 per cent to show gross *or microscopic* lesions).

The Worcester dementia præcox findings are perhaps in part explicable by the prevalent standard of anatomical diagnosis, anxious to avoid magnifying the importance of small atrophies or anomalies. It is also interesting to note that fully half the cases of dementia præcox autopsied at Worcester were of comparatively brief total duration (less and often far less than two years). Moreover nine out of the thirteen katatonic cases were in this brief-duration group: if the Danvers suspicion that the lesions of katatonia tend to be post-Rolandic is a well-founded suspicion, then another reason for missing the lesions can be adduced. In the writer's experience atrophic lesions of the posterior association area are most often missed, and similar lesions of the anterior association area most often neglected because so common.

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The fact that these cases of dementia præcox are almost equally divided into a group with deaths two years or less from onset and a group with deaths eight or more years from onset suggests an inquiry to determine whether there may be two biological groups of these cases (the total series of all sorts of mental disease fails to show such a division).

Should this curious distribution of durations in the dementia præcox series be confirmed from other quarters it might prove possible to distinguish a *dementia præcox brevis* from a *dementia præcox longa* on grounds of differing natural history.

Conclusions.

1. The main object of this communication is to stimulate interest in normal or normal-looking brains in psychopathic subjects, so that the question whether insanity is, or is not, always a matter of structural brain-disease may approach settlement.

2. Normal-looking brains have now been found in a large fraction of senile dementia cases in two autopsy series, so that the "functionality" of these cases stands on as good a footing as that of various more generally recognized "diseases of mental function."

3. The issue in dementia præcox is now clearly defined, since one series (Worcester) might be interpreted to affirm the functionality, and the other (Danvers), to affirm the structurality ("organic nature") of the disease in question.

4. Incidentally the question has arisen whether dementia præcox may not on the ground of viability be divided into *dementia præcox brevis* (with early death, say under two years from onset; katatonic form often here found) and *dementia præcox longa* (in which the subject dies, as a rule more than eight years after onset, of a variety of causes; katatonic form less frequent).

5. Use has been made of a principle that apparent normality of brains may be consistent with fine microscopic changes, possibly of a reversible nature, and that we shall hardly from gross appearances be able to assert abnormality of brains unless at least three months (pre-indurative period) have elapsed from the onset of some cell-destructive process.

6. Use has been made of a principle to the effect that various nerve cells which are in all respects intrinsically normal may be essentially sharing in processes extrinsically abnormal.

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7. The hypothesis is raised that the whole cortex, or even the whole nervous system, might be intrinsically normal but extrinsically abnormal in its reactions to a given chemical, physical or other condition.

8. It is possible that the solution of the problem of the functionality of various diseases might be to consider the structures involved as intrinsically normal whereas extrinsically abnormal—the normal operation of various cells leading to injurious effects in the organism as a whole.

9. It seems clear that the general statement *"insanity is brain-disease"* is well-nigh meaningless unless the particular structures thought to be involved are specified, since it is clear that science has not discovered even the right place to look in certain diseases (no more in mental disease than in certain forms of, say, diabetes).

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REPORT OF A CASE OF A LARGE ENDOTHELIOMA OF THE FRONTAL REGION OF THE BRAIN.

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The case here reported is that of an intracranial tumor, an endothelioma, involving the frontal region of the cerebrum. Three factors, two general in their application. one specific. are of interest in connection with this report. First: Of the commoner types of intracranial growths, endotheliomata appear to be less frequent than other varieties. Second: The possible long duration of the lesion in the present instance. Third: Although the clinical symptoms in this case correspond in many respects with the observations made of frontal tumor, in a large hospital where mental diseases predominate and where thorough routine neurological examination in all cases is precluded, there is great liability of similar cases being mistaken for general paralysis.

Of 16 or 17 different pathological varieties of intracranial growths mentioned in the literature, gliomata appear to be the most frequent. In a recent review of 500 cases of intracranial tumors, Tooth finds that as compared with gliomata, endotheliomata are much less common and that the latter occur practically only in the anterior fossæ of the skull and he observes that it is "curious and interesting point, and it is difficult to explain why the endothelium of the falx and only the anterior part of it should be affected to the exclusion almost of all the rest of the great dura matral sheath." Blackburn and Hough on the other hand found, in 29 intracranial tumors studied, 17 endotheliomata which they believe are probably derived from the lymph spaces of the dura.

As to the possible long duration of the new growth in the present case there are no substantiating facts, but it is to be noted in the anamnesis that 15 years ago the patient suffered a nervous breakdown from which he never fully recovered and was of sufficient severity to cause him to retire from active professional

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work and lead a purposeless, inactive life. Ten years later we find the patient having attacks of lethargy with some affect of depression. The acute symptoms we note presented a rather abrupt onset and were of only four months duration.

A review of a portion of the literature relating to frontal tumors leads one to depend not so much upon the neurological symptoms in localizing the growth as to be guided by the psychic manifestations. There appears to be considerable weight placed on the mental disturbances caused by frontal tumors, more especially the occurrence of apathy, lethargy, somnolence and progressive mental deterioration. Oppenheim remarks that "in those cases in which mental defect, apathy, stupor or some well-defined psychosis has constituted a striking symptom, the suspicion of frontal tumor may be entertained." Gowers has stated "in cases where there is pronounced mental disturbance . . . or actual dementia, the tumor is generally in the anterior portion of the frontal lobe." Schuster in his exhaustive monograph on the "Psychical Symptoms of Brain Tumor" found 12.1 per cent of the tumors to be in the frontal lobes. Dercum in his report of a "Tumor of the Frontal Lobes with symptoms of General Paralysis" makes reference to progressive mental deterioration, indifference and apathy, while C. K. Mills remarks, "It is well known that psychic symptoms have often been observed in frontal, and especially, prefrontal tumors. Finally Knapp reports that five of six cases of frontal tumor studied by him showed simple mental failure with marked dullness. These observations accord with the findings in the present case, moreover the symptoms which in any manner indicated cerebral irritation were late in appearance and were not unlike those occurring in the terminal stages of general paralysis.

Clinical History.

The patient, a male aged 45; married; was born in St. Louis, Mo., of Bohemian parentage. Little is known of his family history or of his early life other than that when a boy he learned to play a violin under his father's and professional instruction. At 14 he became leader of an orchestra and until 1897, when he was 30 years old, continued as such. It is stated that the patient was especially proficient in original composition and transposition,

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quick at reading and memorized much. In natural disposition he was retiring, made few intimate friendships, but was not unsocial. In his habits he drank liquor to moderate excess and used tobacco. There is no history of specific disease. He is said to have had no serious illnesses nor injuries. A nasal polyp was removed when he was nine years old. In 1897 following a period of hard work conducting an orchestra by day and composing music by night he "broke down" and after an attempt to resume he gave up his professional career and retired to a small town where he worked as a painter of metallic goods. He frequently complained of indigestion which he attributed to the odor and taste of paint. In 1908 he had an attack of abdominal colic and diarrhœa followed by a severe furunculosis of the buttocks.

The onset of the final sickness apparently dates from December, 1910, although for the past 15 years and more especially the past 5 years, the patient has frequently felt indisposed, lethargic and stated that his "nerves did not feel right." In December, 1910, he gave up work, remained at home, became logy, lacked energy and was reluctant to move about; he seemed blue and dissatisfied, complained of having no work although he could have secured it if he had sought it. In February, 1911, while walking on the street he suddenly fell, was removed to an office where he remained unconscious a short time. No sequelæ were noted and in May, 1911, his general health had so far improved that he resumed work which he had relinquished in December, 1910. In the middle of September, 1911, the patient again became inactive, lethargic, slow of movement, inclined to remain abed until late in the morning, requiring prompting to go to the mill both before and after breakfast and at the noon hour. On October 5, 1911, his inactive, dull condition became so aggravated and his being unable to perform a satisfactory day's work (noted by his employer) he remained at home. On the following day he was sent to the grocery but having been gone so long his wife went on the errand and learned that the patient had not been to the store. Upon her return home she found the patient lying upon the floor at the foot of the stairway down which he had evidently fallen. He was assisted to bed where he remained for a day. Total amnesia for these events prevailed. Shortly after this it was noted that the patient's face was expressionless, his

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speech slow, hesitating and delayed. His left arm was so weak that he required assistance in dressing and he was no longer able to hold his violin in position. Two weeks later a left foot drag was noted. At this time mental torpor, forgetfulness and apathy supervened. He made errors in dressing himself and while giving violin lessons he would lapse into dull forgetful conditions, so that what was formerly a half-hour lesson now required two or three hours. It is worthy of notice, however, that to the last of his playing the violin, which was only a few days before he was sent to the hospital, the patient was accurate in tone perception and reading, but slow in execution, lacking in expression and very forgetful. In writing he lacked spontaneity, but at dictation he comprehended, wrote and spelled correctly.

Since October 5, 1911, the patient had four or five attacks of vertigo during which he fell to the left with attempts to save himself and these attacks were not associated with unconsciousness. Mentally the deterioration was progressive, lethargy being pronounced, disorientation for time, sloven table habits, insomnia with restlessness accompanying features. Shortly before his admission to the hospital the patient presented symptoms of apraxia and an unconscious loss of control of sphincters became a troublesome feature. Throughout the course of the disease, hallucinations, headache, vomiting or cephalic tenderness were never observed.

Upon admission to the hospital, December 16, 1911, the patient appeared demented, very indifferent and inactive. He walked unsteadily and in the ward he remained quietly in bed which he soiled shortly after taking the customary bath. The physical examination revealed an expressionless countenance. Skin, mucous membranes and fauces normal. Moderate muscular development of good tonus. No glandular enlargement. A systolic mitral and a presystolic aortic murmur were heard in the cardiac region. The respiratory and alimentary systems negative. The neuro-muscular examination showed the left side of the face to be lower and flatter than the right. Tongue protruded promptly with fibillary tremor and deviated to the right. Lips retracted equally well on both sides with fine tremor. Pupils unequal, the left being slightly larger, but both reacted well to light and accommodation. Cutaneous reflexes normal. Deep reflexes active

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and equal. No Babinski's sign nor ankle clonus. Gait and Rhomberg position showed marked unsteadiness. A significant, indeed the only subjective, symptom offered was the ever present odor and taste of paint. The only sensory disturbance was that of sight, as the patient was unable to read newspaper print without the aid of glasses. The emotional attitude was one of marked apathy and indifference. There was no disturbance in comprehension nor attention, although the latter lapsed quickly. Orientation, recent and remote memory and grasp upon surroundings showed impairment. There was marked poverty of thought and general lack of psycho-motor activity. There was no delusion formation and hullucinations were not elicited.

In the early part of January, 1912, it was noted that the patient was very somnolent, so much so that during short interviews he lapsed to sleep. At this time his speech was quite tremulous, but other physical changes were not obtained. On February 19, 1912, while asleep the patient made a slight outcry which was followed by a tonic and clonic convulsion, the head and eyes being fixed to the left, the eyes turned consensually upward and outward. The right pupil was larger than the left and both reacted sluggishly to light. Double ankle clonus, more active on the left, double Babinski's sign, more active on the right, was observed. From this date until death the patient remained unconscious. During four hours he had seven convulsions which involved the left facial muscles, left arm and leg. Following lumbar puncture the convulsions ceased for 10 hours when slight left sided convulsions recurred frequently. The patient became progressively weaker, hiccough being an added complication and he died on the second day after the onset of the convulsions.

Autopsy.

The visceral examination revealed calcification with plaques of thickening throughout the length of the aorta, thickening of aortic and mitral valves and lesions of broncho-pneumonia in the lungs.

The calvarium was found to be rather thin and rather soft, the internal table being especially thin. Diploe rather marked in amount and widely distributed. Dura taut and thin, slightly opaque. On stripping back the dura it was found to be adherent along the mid-line to the posterior end of a roughly quadrilateral

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space about 4 cm. in width by 8 cm. in length which lay along the longitudinal sulcus and appeared as a distinctly different type of tissue than the adjacent brain substance. It was grayish pink in color and apparently made up of strand-like accumulations of tissue. The point of adhesion to the dura occupied a space approximately 1.5 cm. in circumference. The brain weighed 1560 gms. Pia thin and translucent. Pial vessels engorged with blood. Convolutions firm and everywhere flattened. Under the tumor mass mentioned in the description of the meninges the consistency was much harder, otherwise there was very little variation from the normal. The majority of the tumor mass was apparently situated to the right of the median line and had pushed over the right first frontal convolution so that the gyrus formed a large curved detour around the more or less quadrilateral tumor mass. The tumor apparently was divided in the mid-line and a smaller mass projected into the first frontal gyrus of the left side, although this gyrus was not displaced laterally so much as on the right side, but its mesial surface was markedly atrophic and reached the dome as a narrow knife-edge of cortex overlapping the edge of that portion of the tumor. Sections showed that the tumor was roughly ovoid in shape, beginning well up in the frontal pole within 1 or 2 cm. of the pole itself, and extending back for a distance of approximately 12 cm. The greatest diameter was about midway of this distance where it was approximately 8 cm. in width. Below it reached almost to the orbital plate and was separated from it by only a narrow remnant of the former orbital convolutions. In this position the two halves of the tumor mass were united. Higher up they separate along the line of the great longitudinal fissure, the larger mass lying in the right hemisphere and the smaller running into the left hemisphere near the longitudinal fissure. It was apparent that the tumor had pushed back the structures of the right half of the brain so that sections cut transversely across the brain showed that the temporal pole on the right was a trifle farther back than on the left, that the optic thalamus was definitely farther back, that the internal capsule with its associated ganglion structures and the anterior end of the corpus callosum, and the anterior end of the right lateral ventricle were all more dorsally placed on the right than on the left. Apparently this displacement took place without

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great loss of substance. The tumor mass itself was loosely encapsulated and it was the capsular surface which gave to it the strand-like appearance described under the meninges. The tumor showed as a fairly solid flesh pink mass with numerous small hæmorrhagic foci. There were, however, no foci of softening other than those associated with hemorrhage. The capsule where the tumor reached the pial surface was fairly definite and where it came in relation with brain substance there was less demarcation, yet the tumor did not appear to infiltrate the brain substance except possibly to a slight amount on the lower surface in the frontal fields. That portion of the tumor which was adherent to the dura was apparently a semi-detached mass lying above cortical structures and entirely separated dorsally from the remainder of the tumor, but confluent toward its anterior end. Those portions of the cortex affected by the immediate pressure of the tumor all lay in the frontal, prefrontal and intermediate precentral fields. Apparently the tumor did not extend as far back as the precentral fields, although the mass attached to the dura rested apparently on the gyrus immediately in front of the precentral. The white matter adjacent to the tumor mass showed a condition of softening which was definitely palpable. The orbital plate of the sphenoid and frontal bones and the orbital fat pads were so thin that the bone appeared as a thin sheet which could be broken with the pressure of a finger.

Microscopic Examination.

The microscopic examination of the trunk organs added nothing of interest.

The microscopic examination of the brain in those parts not immediately adjacent to the tumor showed dilatation and engorgement of vessels of all calibers in both meninges and the brain substance itself, the larger vessels showing a definite thickening of the adventitia. Where the larger meningeal vessels lay, they deeply indented the cortex. The pia was everywhere thickened, but in variable degrees. The nerve cells except in areas where pressure was marked were apparently in normal condition. There was an increase of satellite cells in the deeper laminæ. While there was no neuroglial increase in the substance of the cortex, there was everywhere evidence of increase at the

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surface of the zonal layer. As in the case of the nerve cells, the nerve fibers were apparently unaffected, except in those local areas where pressure had been most marked.

The examination of the areas immediately adjacent to the tumor here revealed the vascular changes as mentioned above, but in greater degree. The pia, in addition to the general thickening, presented foci of marked increase of cells of a type resembling those of the tumor. The nerve cells presented interesting features dependent upon the direction of the tumor pressure. Where the pressure was apparently lateral the cells were narrowed and relatively elongated. In other instances, where there had apparently been compression from above, the basal portions of the nerve cells were broadened, while the apical portions were shortened, or the basal processes had practically disappeared. The cells were fairly well stained, but the tigroid bodies appeared as small granules. The nuclei were small, pale and for the most part central. Here and there, in areas where there was sharp curving of the cortex, the cells appeared to be compressed laterally. In general, where the compression was greatest, the cells beneath the summits of the convolutions appeared compressed and narrowed, while the compression of the adjacent convolutions gave rise to distortion not only of the normal vertical arrangement of the cells, but also to distortion of the lamination as well into unusual planes, even circular-like figures. The cortex showed a good content of fibers of all sizes except that in the summits of those convolutions which suffered most from compression were more sparsely supplied than adjacent parts. Here, however, there were numerous well-stained fibers, the brunt of the loss falling upon the coarse varicose type while the finer fibrils suffered less.

The tumor was made up for the most part of cells with large vesicular nuclei and large masses of protoplasm. The cells in most places were irregularly polyhedral in shape in some areas stretched out in cylindrical or spindle shapes. The nuclei varied markedly in size in different parts of the tumor. Some small, containing a considerable portion of chromatin granules, others larger and in some places very large. The large types were vesicular containing very little chromatin, but deeply stained chromosomes. The tumor carried very little supporting tissue

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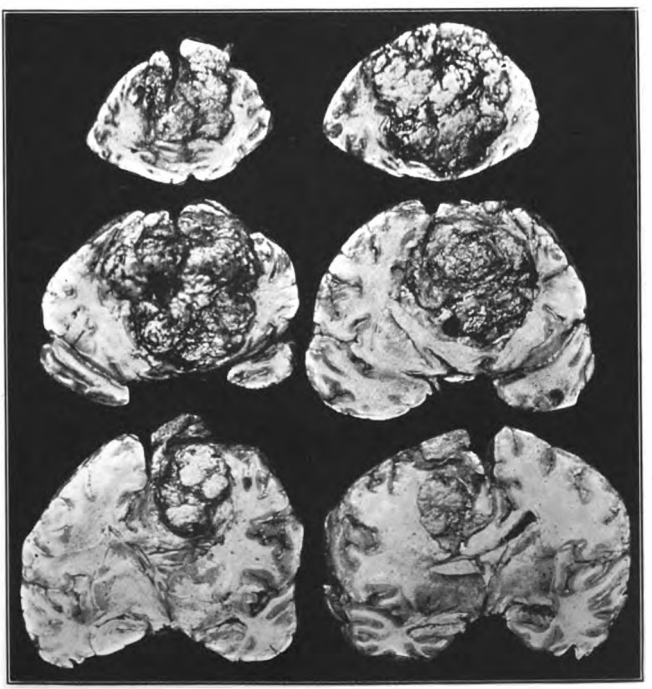
Photograph showing exposed surface of large tumor mass in right frontal lobe separated by a cleft from a smaller mass encroaching upon the left.



Photograph of 6 slabs of 2 cm. thickness showing relative size and position of tumor mass.
Slab in lower right corner reversed so that right side of section appears on the left in the illustration.
Left upper illustration shows cleft appearing in photograph of whole brain.

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of any sort. There were, however, numerous vessels and some strands of connective tissue. In some places these connective tissue masses were undergoing degenerative changes and numerous small hemorrhages for the most part associated with small vessels were noticeable. As a rule the tumor cells were well preserved and in some sections they showed a tendency to group themselves in a whorl-like arrangement around the vessels.

In the soft white matter mentioned in the protocol there occurred glia cells in increased numbers. Among these could be seen nuclei in the resting stage, cells with a marked increase of their protoplasmic bodies which had not reached the stage of fibril formation and others active in fibril production. There were very few phagocytes in this area.

SUMMARY.

The case is that of a large endothelioma of the frontal region of the brain, located chiefly in the right frontal lobe, but also extending into the left frontal lobe.

The pathological findings are compatible with a tumor of slow growth.

The patient from boyhood possessed especial attainments. Fifteen years ago he suffered a nervous breakdown resulting in retirement from an active professional life. Subsequently there occurred periods of lethargy, depression and loss of ambition with final incapacity for self-support.

Beginning with a transitory period of unconsciousness, various neuro-muscular disturbances were apparent which were followed by apathy, somnolence and progressive mental deterioration, which symptom complex in the absence of thorough neurological examinations led to the diagnosis of general paralysis.

The writer wishes to express his thanks to Dr. S. T. Orton for the foregoing autopsy report and helpful suggestions.

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THE CURABILITY OF INSANITY.*

By A. I. NOBLE, Kalamazoo, Mich.†

Half a century or more ago some of the leading psychiatrists of this country were making remarkable claims for the curability of insanity. In a generous rivalry they cited the statistics of their respective asylums to substantiate their claims to the actual cure of 80, 90 and even a greater per cent of recent cases discharged. Through the dissemination of such reports public interest in insanity was undoubtedly awakened and a highly fictitious value as regards cure was accorded to hospital treatment. Indeed there can be little question that such optimistic misinformation had a great influence during the early constructive period of American asylums. In speaking of the success of these institutions, a distinguished English alienist of that time declared that it "excited the envy and despair of my confrères and myself." Soon, however, these wonderful successes were discovered to be apparent rather than real and to be dependent upon restricted observation, the confusion of persons and cases, the personal equation and some other defective methods of compiling statistics.

It is a matter of ancient history that with the passing of the pioneer psychiatrists referred to, the record of cures in some of their asylums suffered a tremendous drop, amounting in certain cases to 50 per cent. Our experience then became more nearly that of England and there was less disposition to question the famous formula of Dr. John Thurman, who traced the history until death of 244 patients at the York Retreat and deduced the following general rule: "In round numbers, of 10 persons attacked by insanity, five recover and five die, sooner or later, during the attack. Of the five who recover, not more than two remain well during the rest of their lives, the other three sustain subsequent attacks, during which at least two of them die." This indicates a permanent recovery rate of about 20

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per cent. Sir Arthur Mitchell in 1877 traced the histories of 1297 persons admitted to the Scottish asylums in 1858 and arrived at the same results. In 1879 Dr. Pliny Earle investigated the subsequent history of 25 persons, published by Dr. Woodward 36 years before as recent cases, recovered at the Worcester State Hospital, and the results were even more unfavorable than those upon which Thurman based his rule. There were but seven patients who did not have a second attack, 18 did have a second attack or more, seven had died insane, two were in almshouses long incurably insane, one had died at home who was never well but a few months at a time. Of the original 25, eight were living in 1879, and the writer believed that some of them would die insane.

Dr. T. A. Chapman in 1884 "collected statistics of 46 British asylums for (in most instances) 11 years, 1872 to 1882 inclusive," and he found a recovery rate of 37.95 per cent based upon the admission of 93,443 cases of insanity. Dr. Earle found a recovery rate of 29.15 per cent based upon 33,318 cases admitted to American institutions, while upon two other series of 23,052 and 14,372, at 20 American institutions in the former case and at 58 in the latter, the recovery rates were respectively 29.91 and 27.88 per cent. The conclusion drawn was that the recoveries of the British institutions were greater than the American by 8 or 9 per cent. It would be unfair to assert that the keenness of the English psychiatrists to effect cures has anything to do with this higher percentage, but it is only a year or two ago that the writer read an article published by one of them in which he attempted to show that the cures of the English asylums were proportionately as great as those of the English general hospitals.

Contrasting our efforts with those of an earlier day, it would be an absurd proposition to maintain that we have been less successful or, considering the enormous expenditure of energy and money in behalf of the insane in the last generation or two, that we have been no more successful, than our predecessors; and yet it might be difficult, as regards reported cures, to demonstrate a better understanding of insanity on our part or to prove the superiority of more elaborate and scientific methods of treatment.

Because there is "no standard definition of what constitutes recovery from insanity" and because "the percentages of re-

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coveries reported from different institutions vary in an astounding degree," the statistician of the Bureau of the Census in his last report, in order to make what he regarded the most intelligent compilation possible, grouped all discharges from the hospitals for the insane in the United States under the headings, "Improved," "Unrecovered" and "Not Insane." He was undoubtedly warranted in making this classification, but he has involved in a hopeless tangle the recovered and the improved, and he has conveyed no accurate idea of the curability of insanity or of the real success of treatment. Thus upon this imperfect basis of discharges for continental United States he shows an *improvement* rate for the year 1904 of 76 per cent and an *improvement* rate of 34.5 per cent upon the more usual basis of admissions. Calculated in the latter way, the Michigan institutions show an *improvement* rate of 42.2 per cent for the same year.

If we compare the recovery rate, based upon admissions, of several asylums of this country, taken at random, we see at once the remarkable differences and no longer wonder that the census statistician found it impossible to reconcile the figures or to analyze the conditions which produced such varying results. Thus the percentages of the following state hospitals for the years, in most cases, 1908-1910 are:

State	Hospital	Per cent of recoveries	State	Hospital	Per cent of recoveries
Illinois	Elgin	19.18	Ohio	Dayton	17.03
Illinois	Kankakee	12.33	Ohio	Cleveland	29.21
Iowa	Cherokee	10.16	Pennsylvania	Norristown	26.65
Iowa	Independence	21.00	Pennsylvania	Warren	14.68
Indiana	Northern	16.35	Pennsylvania	Harrisburg	9.17
Indiana	Eastern	22.72	Pennsylvania	Dixmont	19.92
Louisiana	East	11.00	Virginia	Staunton	20.00
Maryland	Springfield	21.73	Tennessee	Bolivar	36.26
Mississippi	State	15.53	Washington, D.C.	St. Elizabeth	27.12
Minnesota	St. Peter	17.00	Wisconsin	Milwaukee	24.56
Maine	Augusta	21.16	Michigan	All hospitals (1908–1910)	16.01
Maine	Eastern	15.84			
Rhode Island	State	10.63	Michigan	Ionia	11.70
Massachusetts	All hospitals	13.47	Michigan	Psychopathic	13.06
New York	Manhattan	24.80	Michigan	Traverse City	14.70
New York	Utica	21.26	Michigan	Kalamazoo	14.91
New York	Buffalo	29.88	Michigan	Newberry	18.18
New York	Kings Park	20.56	Michigan	Pontiac	19.61
New Jersey	Morris Plains	25.27			

Of such an array of figures one is disposed to say, "How futile!" And yet within a year I have been requested by no less personage than a governor of a state, an intelligent man of an in-

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vestigating turn, to give him the figures to show what state or institution was having the greatest success in treating the insane. No attempt was made to satisfy his curiosity; otherwise he might have been convinced by the above statistics that Bolivar, Tenn., is the Mecca toward which we should all hasten. The success attained there, it would seem, is just four times what it is in Harrisburg, Pa., and two or three times greater than in a number of other institutions, while the variations between states, and often between two institutions in the same state, are curious and perplexing. While it is to be presumed that all the institutions here represented are doing good work, some of the states are preeminent in their care and treatment of the insane, although the percentages do not always clearly indicate it.

Assuming that the Kalamazoo State Hospital in point of efficiency occupies an average place with respect to the other institutions of the state and country, let us examine the character of its admissions and discharges for a short definite time, say for the last biennial period (July 1, 1910, to June 30, 1912), since in this way we shall arrive at a more intelligent opinion as to what may be expected from hospital treatment of the insane than did our predecessors who, in making their prognostications, were wont to lay great stress upon the duration of a psychosis and who did not, I believe, make the diagnostic investigations which we now regard as essential and the first step toward rational treatment.

There were admitted to this hospital during the two years selected (1910-1912) 960 patients, 516 men and 444 women. These patients were carefully examined and for the most part classified upon admission. We find them arranged upon the chart in 13 groups, the last of which includes a few aberrant cases not easily classified. Some of the groups, as will be seen, are broad in their scope and embrace several subdivisions, and others are restricted to a single type. Some of them refer to forms of mental disease generally classed as curable, while others suggest a decidedly unfavorable prognosis.

Taking up these groups in order and to some extent analyzing the results of treatment, we find that Insanity Due to Intoxication includes 8 per cent of the admissions, that 6.7 per cent are covered by the general term alcoholic insanity, while 1.2 per cent were drug cases, and there was one case of Korsakow's psychosis. We

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	REMAINING JANUARY 1, 1913					RECOVERED BETWEEN JULY 1, 1912, AND JAN. 1, 1913					PATIENTS REMAINING JANUARY 1, 1913, WHO MAY RECOVER				
Admission	Men	Women	Total	Classification	Admission	Men	Women	Total	Classification	Admission	Men	Women	Total	Classification	Admission
P. ct.				*P. ct.*	*P. ct.*				*P. ct.*	*P. ct.*				*P. ct.*	*P. ct.*
3.	21	2	23	35.3	2.3	2	0	2	3.07	.20	2	0	2	3.07	.20
.83	2	2	4	33.3	.41	..	..	..	.....	.....	..	..	..	.....	.....
.10	1	0	1	100	.10	..	..	..	.....	.....	..	..	..	.....	.....
.52	2	2	4	7.6	.41	..	..	..	.....	.....	1	0	1	1.9	.10
6.8	26	13	39	28	4.06	0	2	2	1.4	.20	..	..	..	.....	.....
.62	6	0	6	35.2	.62	..	..	..	.....	.....	..	..	..	.....	.....
.31	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
.62	4	2	6	60	.62	..	..	..	.....	.....	..	..	..	.....	.....
.10	0	1	1	100	.10	..	..	..	.....	.....	..	..	..	.....	.....
.....	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
.....	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
4.7	25	3	28	35	2.09	..	..	..	.....	.....	..	..	..	.....	.....
2.9	4	20	24	37	2.5	..	..	..	.....	.....	..	..	..	.....	.....
.....	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
8.7	39	35	74	69.8	7.7	..	..	..	.....	.....	..	..	..	.....	.....
.10	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
1.8	0	15	15	53.5	1.5	..	..	..	.....	.....	..	..	..	.....	.....
8.9	20	41	61	31.7	6.3	7	11	18	9.3	1.8	7	14	21	10.9	2.18
.10	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
.72	1	5	6	26	.62	..	..	..	.....	.....	0	1	1	4.34	.10
3.1	13	7	20	42.5	2.08	..	..	..	.....	.....	..	..	..	.....	.....
.....	....	....	....	.....	.....	..	..	..	.....	.....	..	..	..	.....	.....
.62	1	2	3	27.27	.31	0	1	1	9.09	.10	..	..	..	.....	.....
3.2	14	13	27	51.9	2.8	..	..	..	.....	.....	..	..	..	.....	.....
.41	2	2	4	44.4	.41	..	..	..	.....	.....	..	..	..	.....	.....
.41	0	3	3	10.3	.31	..	..	..	.....	.....	..	..	..	.....	.....
.31	1	1	2	20	.20	0	1	1	10	.10	..	..	..	.....	.....
48.87	182	169	351	848.77	35.44	9	15	24	32.86	2.40	10	15	25	20.21	2.58

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should agree that the expectancy in this group is fairly good, and yet two years from the beginning of the period only one quarter of them had been discharged as recovered, 10 per cent of them had been discharged as improved, 3.8 per cent as unimproved, 10 per cent had died, 48.7 per cent were in the hospital at the end of two years, and 35 per cent six months later with the prospect that less than 7 per cent of the residue would ever recover.

The Infective-Exhaustive group, which also ranks as curable, comprises 5.4 per cent of all admissions. Of this class, about 27 per cent were discharged as recovered, 9.6 per cent as improved, while more than half of them (53.8 per cent) died within the period, and 9.6 per cent remained at the end of that time. Six months later there were still remaining 7.6 per cent of the whole number with the prospect that one of this number might recover.

Group III, of which we may predicate some definite structural change in the nervous system, is naturally rated as incurable and includes 32.51 per cent of all admissions. The recovery columns in the chart opposite the divisions of this group are blank, although improvement is noted in 5.7 per cent of the cases of arteriosclerosis and in 23.5 per cent of the cases of brain syphilis. Improvement was also seen in general paralysis, senile insanity and paralysis agitans. Of the class 4.3 per cent were discharged as not improved and 41 per cent died in the two years, while at the beginning of the year 1913 there was a hopeless residue in the hospital of nearly 33 per cent.

In the Dementia Præcox group we find deteriorating cases amounting to 11 per cent of all the commitments. There were no cures among the discharges of this class of patients, and the improved number not quite one per cent, the unimproved 11.3 per cent, the deaths one-tenth of one per cent, and those still in the institution at the end of the period and six months later were 79.2 per cent and 69.8 per cent respectively.

Group V includes two cases that were classified as pure paranoia and 28 cases of insanity which were provisionally termed paranoid states. Together these constituted 3.1 per cent of all admissions, and are regarded as incurable. The one cure which took place among the paranoid states was probably due to a mistake in diagnosis. Nearly two-thirds of them remained in the institution at the end of the period and one-half the whole number at the beginning of this year.

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Group VI embraces the large and important class of manic-depressives. They constitute 20 per cent of the admissions and are the most curable class. Notwithstanding this, only a little more than a quarter of them (26.4 per cent) recovered, 15.5 per cent of them were discharged as improved, 3.6 as unimproved, 9.3 per cent died, while 45 per cent remained in the hospital at the end of the period and 31.6 per cent six months afterwards with a favorable prognosis as regards cure in only one-third of them.

Some of our favorite authors have decided to no longer regard melancholia as a distinct entity, but it is retained in our classification, and is distinguished from the previous group, for example, "by the lack of degenerative and hereditary elements, by its appearance at an advanced age, by the absence of motor and psychic inhibitions, and by the existence of crises of anxiety with delirious ideas, and by an altogether different evolution," although there may be more warrant to relegate it to a presenile group. We have here included 2.3 per cent of the admissions. Of these 4.3 per cent were discharged as recovered, 17.3 per cent as improved, 21.7 as unimproved, while 26 per cent died and 30.4 per cent remained in the institution at the close of the period and 26 per cent half a year later with the prospect of one further cure.

Group VIII, Arrested Mental Development, included imbecility and idiocy, or 4.9 per cent of the admissions. Of these 14.6 per cent were discharged as improved, 21.2 per cent as unimproved, and 63.8 per cent remained in the hospital at the close of the two years, this number being reduced one-third in the following six months.

Hysterical Insanity, found under Group IX, constitutes only a trifle more than one per cent of the admissions. This must be classed as a recoverable form of mental disease, since 18 per cent of this number recovered. An equal number were discharged as improved, 9 per cent as unimproved, while there remained under treatment 54.5 per cent at the end of two years and 27 per cent at the end of two and one-half years.

Although arrested mental development is sometimes associated with epilepsy, we have assigned to Group X 5.4 per cent of all admissions. One woman of this number recovered from her

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psychosis, but not from epilepsy, 15.3 per cent of them were discharged as improved, 13.4 per cent as unimproved, 9.6 per cent died, and 59.6 per cent remained in the hospital at the close of the biennium, this residue becoming about 52 per cent six months later with no prospect of recovery.

In Group XI, Psychopathic States, are included the neurasthenics, psychasthenics and a few cases of abnormal personality, together amounting to less than one per cent of all the admissions. Of this small number 22 per cent were discharged as recovered, an equal number as improved, and 11 per cent as unimproved, while 44 per cent with a poor prognosis remained in the institution two and a half years from the beginning of the biennial period.

Group XII is made up for the most part of voluntary patients who are not insane. They constitute three per cent of the admissions.

Group XIII consists of one per cent of our patients, who lack the definite symptoms necessary for classification.

There were, then, committed to the Kalamazoo State Hospital, during the biennial period referred to, 960 patients. Of these 381, or about 40 per cent, were suffering from what might be termed curable forms of disease and 579 from incurable forms. The recoveries tabulated in the two years were 93, or 9.5 per cent of the admissions, those discharged as improved 10.19 per cent, unimproved 7.22 per cent, while 20.79 per cent died, and 48.87 per cent remained in the hospital. In the six months following the period this remnant was reduced to 35.44 per cent and the cures had been increased by 2.40 per cent, making the total cures in two and a half years 11.9 per cent of the original admissions. Moreover, there was a probability that 2.58 per cent more of these patients would eventually recover. Disregarding the small and uncertain per cent of patients who may have recovered at home, this would make possible, so far as these particular patients are concerned, a complete recovery rate of 14.48 per cent, and applying Thurman's rule, a permanent recovery rate of, approximately, 6 per cent.

Past and present conditions seem to warrant us in assuming that we shall not make very much greater inroads upon these diseases in the near future, although a general survey of the state

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with reference to all defectives might result in broadening the scope of hospital activity and in establishing and maintaining, at the expense of the state, social and eugenic workers who would accomplish much for the individual and the community. I believe that very few of our leading psychiatrists are now especially enthusiastic over the prospect of cure from insanity as a general proposition. Formerly there were many such—some from honest conviction and probably some from selfish motives. To me this is a good omen. While research and experimentation, which we should not in the least abate, and improved methods of treatment will sometime bring greater results, still it is absurd for us to attempt so little toward preventing the flood which threatens to overwhelm us.

There is probably no doubt in our minds that alcohol, directly or indirectly, is a potent factor in the production of insanity and the various neurotic conditions which are so apt to develop into psychoses. The questions involved are medico-social in character, and no one is better qualified to take the initiative in their settlement than the medical man. It is not rational or ethical for the medical profession to remain passive while treatment in these cases goes by default or while the public is viciously swindled by the so-called " jag cures " which flourish on every side; nor should the profession fail to act energetically if it is convinced that there is a better and more scientific method of treating inebriety than obtains at the present time.

I believe that we should colonize the alcoholics, that we should segregate and colonize and sterilize the epileptic and the feeble-minded, and I believe that we should do it now.

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A CASE OF EPILEPSY.*

By E. V. SCRIBNER, M. D., Worcester, Mass.

While I have but one particular case of epilepsy which I propose to present, as there are many features of this case in which questions of diagnosis might be raised, I have considered it of importance to preface my presentation with some observations on epilepsy in general.

Epilepsy is one of the oldest diseases of which we have any recorded and adequate description. It is quite natural that this affliction should have early attracted the attention of medical observers because of the striking and spectacular character of its manifestations and the difficulties which have been met in the attempts to treat it. There seems to be no essential difference in the description of the early writers from that which would apply to-day to the easily diagnosed cases of the disease. With the advancement of our knowledge of the subject, however, many formerly obscure and poorly understood conditions are now recognized as epilepsy, thus broadening and extending the classification of this disease.

Idiopathic epilepsy is essentially a disease of degeneracy. One author finds defective heredity in 87 per cent of his cases in which he has a complete history, and in over 25 per cent there was epilepsy in the person of one or both parents. In general, epilepsy is a disease of childhood and youth, the majority of cases occurring before the age of twenty.

While the diagnosis of epilepsy is usually easy, there are times when there may be confusion with other conditions, the chief of which is hysteria. In epilepsy the mental and physical symptoms predominate, while in hysteria emotional disturbance is most marked. In the one the onset is sudden, in the other gradual. In epilepsy an aura is common, but lacking in hysteria. The former is usually of a few minutes duration while the manifestations of the latter may continue for hours. Then again the convulsions and postures of epilepsy are mainly governed by the flexor

* This paper forms contribution number fourteen of Worcester Hospital (Mass.) Series of 1912, offered in compliment of Dr. Hosea Mason Quimby on the event of his retirement from the superintendency after 20 years of service.

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muscles. In hysteria there is a tendency to extension, opisthotonos—the so-called "crucifixion attitude." In epilepsy the sphincters are often relaxed, in hysteria rarely. In hysteria there can usually be detected an effort at spectacular display. In some cases of epilepsy, particularly in women, there may be a large hysterical element which so masks the symptoms as to sometimes make differentiation difficult. In the particular case which I have under consideration sometimes the genuine epileptic manifestations were completely masked by the hysterical display. Many of her convulsive attacks were hysterical in character. I have, even in the male, seen fits manufactured for the occasion, interspersed with the genuine article. There is usually, however, little difficulty in recognizing the true epileptic convulsion.

Though most epileptics escape actual insanity, according to Peterson only about 10 per cent of all cases being so afflicted, in the majority there is some mental deterioration. This deterioration doubtless depends upon some general and profound disease of the cortex. One theory is that genuine epilepsy is due to a toxic condition arising from faulty metabolism. An attempt has been made to combat this condition with serum therapy. Not only has serum from external sources been used, but even serum from the same individual has been given. Chronic epilepsy is almost always acompanied by some dulling of the intelligence, though it seems a well assured fact that some of the strong characters in history, mentally alert and able men, have suffered from this disease. The mental deterioration is not always in proportion to the severity of the convulsions, indeed the mental results in petit mal seem more disastrous than in the major attacks. In all forms of the disease the mental failure seems to bear a direct relation to the frequency of the attacks. Even where the mental impairment is slight there is a distinctly diminished capacity for work in the higher grades.

The case to which I am calling your particular attention has been one of the most difficult to properly treat and care for with which it has been my fortune to be brought in contact during my whole asylum experience.

R. C. is a young woman about 33 years of age. She was born in the Azores, of Portuguese parentage—single—school girl. The assigned cause of her mental disease is given as "heredity." Her mother is said to have

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been epileptic. She had been insane for about five years before she came under my care. She remained in the asylum nearly seven years, making the whole known duration of the disease—about 12½ years—a length of time which should, in the ordinary course, have found the patient deeply demented with no hope of recovery and but little or no amelioration of condition. The event, however, has been contrary to all precedent and expectation, as you shall see. The diagnosis, on admission, was epileptic insanity. She was noted also as hysterical. In my experience, suicidal attempts are rather uncommon in the epileptic, but in this patient the most desperate suicidal tendencies existed. Throughout her whole hospital residence this tendency has been one of the most distressing features of the case. A suicidal disposition was manifest early in her disease. On admission to the asylum she was childish, petulant and irritable. Immediately after an epileptic seizure she was violent, destructive and suicidal. She had periods when hallucinations of sight and hearing were marked. Her fits were chiefly of the major variety and occurred sometimes every day or two. Then there would be an interval of two or three weeks without any seizure. After a series of fits she generally became stupid for a short time and then extremely resistive, constantly trying to kill herself. Her condition was so extreme that she required a special attendant, sometimes more than one, night and day. During some of her excitements hallucinations of sight and hearing were specially acute. She said that her people came around the building by night and day. She thought that her brothers and sisters were endeavoring to make her suffer for their sins. In some of her excitements, following convulsions, it required the services of five or six nurses to restrain her and prevent suicide. On such occasions she would throw herself about the ward with complete abandon, striking her head against the wall or seat with great force, scratching and biting when interfered with. During her intervals she was usually very quiet and ladylike, attending dances and other chapel entertainments and making no trouble, though always with a private nurse. At these times she would go out on the street and into the shops and make excursions on street cars. On none of these occasions did she ever make any trouble. She was always in the care of a special attendant. The self-restraint which she exercised on these occasions was really wonderful. This is not an uncommon occurrence. Barr, in his book on "Mental Defectives," says that it was rather a common practice on his part to make certain of his patients' promise before going to entertainments, that they would not have a fit in chapel. He says that this promise was rarely broken. He believes that the concentration of the patient's mind on the effort to prevent a fit was really sufficient, for a time, to ward it off.

My patient had not been long an inmate of the asylum when a discharge of pus began from one of her ears, showing a probable inflammation of the middle ear. On some occasions she passed through a period of deep depression when she seemed to fully realize her condition and surroundings. The hysterical and theatrical always was in evidence on slight provocation, even during her depression. Unless her attendants would

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talk to her and pay her a great deal of attention she became very restless. She always desired to occupy the center of the stage, whether in grief, joy or excitement. She was, however, always watching for a chance to be alone. She frequently recounted the different ways of committing suicide, many of which she tried during the time that she was under my care. She varied her efforts between pounding her head against the walls, tying strings tightly around her neck and attempting to cut her throat. With many epileptics a period of excitement comes before the fits. This patient never complained of any distressed feelings before a seizure. Generally following a fit she would scream and bite continually, often remaining more or less unconscious for three or four days. When regaining consciousness she would become very irritable, occasionally talking to imaginary persons and at those times was more suicidal than common. As she grew better she would tell her attendants how easily she could kill them by choking them and then effect her release. At times she succeeded in acquiring a wonderful influence over her nurses, often terrorizing new employees so that she drove them from the service.

At the end of the first nine months of hospital residence her fits had seemed to increase in frequency. She had very noisy periods of pretty incessant screaming and contortions of the body, when it would require two or three or more people to keep her on her bed. At those times she seemed to know nothing at all about what was going on around her. After a time consciousness would return. The following will serve to illustrate the persistence and cunning of this patient in her suicidal attempts. For several days she had seemed pretty well, was cheerful and in no way depressed. About noon, as the other patients were going to the dining room, she was left alone in her room for a few minutes. A nurse, passing through the ward, stopped at the patient's room and looked in. Not seeing anyone the nurse was about to go out again, when a peculiar noise from somewhere arrested her attention. She looked under the bed and there found the patient with a clothing bag string tied around her neck and the other end hitched to the iron railing of the bed. The patient was blue, her face intensely swollen and respiration had ceased. The nurse removed the cord from the neck and at once sought assistance. Artificial respiration was at once instituted, but it was not until after about 15 minutes that the patient began to breathe regularly.

Seven days later the patient again found opportunity to wind something about her neck and respiration was suspended. This time it required 10 minutes of artificial respiration before the natural function was resumed. No specially ill effects seemed to follow these nearly successful attempts at suicide.

Some five months after the above occurrences this patient, in the middle of the night, asked her special nurse for a drink of water. As soon as the nurse went through the door the patient shut it after her and firmly barricaded it with her bed. She then broke out all the glass in her window, pulled down the electric light, tied a cord around her throat, with the other end made fast to the head of the bed, swinging her body beneath the

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bed. It naturally took some moments before access could be had to the room. The door was broken in, the cord removed from the patient's throat and artificial respiration started. Strychnia was also given hypodermically. It was not until an hour later that the patient was out of danger.

During the following summer the patient seemed not so actively suicidal, or perhaps found no favorable opportunity, though she continued to have fits and excited periods with a few days intermission. Frequently the periods of excitement would occur without any convulsive attacks. This is a condition that frequently occurs in the epileptic, the period of excitement and confusion seeming to take the place of a fit—a so-called psychic equivalent. Sometimes fainting spells take the place of active convulsions.

For more than a year this patient continued to have convulsions at irregular intervals, sometimes the fits coming in series. From October 20 to November 6, 1905, she had 80 seizures, 58 occurring within a period of three days. One or two series were broken up with amyl nitrite. Between fits the patient became extremely excited and violent, screaming, jumping, banging her head against anything she could, biting, tearing the nurse's clothing, her exertions often leaving her deeply cyanosed. Some two months later this patient again succeeded in eluding her nurse and hung herself in the basement, being again restored by artificial respiration. On the second day following this attempt she fell into status epilepticus, on one occasion having 28 convulsions in an hour. Amyl nitrite again broke up the series.

Six months later this patient is reported as being much better mentally than at any time during her residence in the institution, having passed over this intervening period without known convulsions. This tends to confirm the statements of various writers that convulsive attacks have a distinctly dementing effect, though not always in proportion to the severity of the convulsion; because with the cessation in frequency of the fits a partial mental improvement follows.

During the following summer and autumn the patient alternated between quiet and excitement, with convulsive attacks at irregular intervals, interspersed with more or less active suicidal attempts. On thanksgiving night she attended the dance but seemed weak and excitable. For several days previous she had been much depressed, made her will and prepared for death. She was constantly talking about assistance in her designs that she was to have from someone about the institution. Her mind seemed to dwell on wood alcohol as a suicidal agent. The following account of what took place was given by the patient and that some of it must have been true is proved by the events which followed. She said that a former nurse procured poison for her, sent it through the mail, to be called for at the post office, and directed to a nurse still in the service. This latter nurse secured it and at the dance succeeded in passing it to the patient. She did not get a chance to take it until two days later when, about 8.40 in the evening, she asked her nurse to get some water for her, when from some source she got a small blue bottle which contained six small white tablets, one of which she took, throwing the remainder out of the window, as she could not hide them.

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So much for the patient's story, now for known facts. Within a few hours she became very faint and for some time seemed to know nothing. At 7 in the morning her tongue was badly swollen and very dry. Her eyes were prominent and swollen, hands cold, pulse good, but her skin cold and moist. She could scarcely articulate because of the swollen condition of her tongue and throat. She complained of intense burning along the intestinal tract. There was enlargement of the lymphatic glands and spleen, with corrosion and loss of a great portion of the mucous membranes of the throat and to some degree of the stomach and intestines. The patient vomited large shreds of mucous membrane and passed large amounts by the bowels, along with considerable blood. She also expectorated blood in some quantities. The stomach was evacuated and salts given for some days in succession. It was not until three or four days that the patient seemed out of danger, but continued under treatment for three weeks. The patient led a somewhat uneventful existence for about a month when she again had acute symptoms similar to those mentioned above, but much less severe. The same treatment once more gave relief. This attack lasted for a week or two.

About a month later, one day, about 3 p. m., she had several fainting spells; her face became pale, head and hands cold and pulse poor. At 4.30 she collapsed. Her face, lips and hands were cyanosed to a deep blue, as were her gums. Ptyalism was marked, saliva simply flowing from her mouth, tongue swollen, with imprints of the teeth along the edge. She complained of a burning sensation along her esophagus and stomach and was unable to articulate distinctly on account of partial paralysis of her lower jaw and the condition of her tongue. She was at once given vigorous treatment to which she slowly responded, but remained in bed for a longer time than in her previous experiences.

After her recovery from this attack she made various conflicting statements as to the assistance which she received from nurses in carrying out her designs. Her statements seemed so unreliable that none would have been given credence if it were not for the very visible and tangible evidence afforded by the symptoms of acute corrosive poisoning. Someone must have conveyed to her some powerful drug which produced the symptoms related.

Following the escapades noted above, it seemed absolutely necessary to take more vigorous measures, so this patient was taken from her room and placed in a chair where she remained in plain view of everyone in the hall. At night she slept in a bed on the corridor of the ward in full view of the night nurses. For some ten days no apparent change was noted, but from that time there was a steady yielding and improvement in behavior, until the patient gradually became quiet, cheerful and industrious, being helpful in the ward work and taking an active and intelligent interest in everything around her. Her complaints ceased and she became in every way a model patient. She continued for almost a year with very few excitements and those in diminishing intensity. For the last two months before leaving the institution she had no excitements at all. For eight

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months she had been entirely free from delusions and hallucinations. For a little more than two years she had been free from convulsions of a distinctly epileptic character and had no convulsion of any nature for over 11 months.

During all this time of improvement she was suffering from an otitis media with usually a free discharge of pus. When this discharge became in any way checked she became somewhat irritated and nervous, but not to a serious degree. For a long time she was very helpful about the ward work, at first under the direction of a nurse, but for the last 8 months alone, and did the work well. She had two or three other patients working under her whom she directed. During meal times she looked after the diet cases, under supervision. She had several letters from her relatives in Portugal, and after a time was visited by her brother, who lived in New Bedford. She was discharged to his care, for removal to Portugal.

In reviewing this case we find an epilepsy of an extremely severe type, with very acute mental manifestations, which had existed for years with no apparent improvement. No drug which was ever administered had more than a passing and trivial effect until we came to the self-administration of the heroic doses of the violently corrosive substance which this patient took. What was this substance? There is but one substance which, in my opinion, could produce such a train of symptoms as it has been shown was produced in each of the three instances chronicled above, and that is mercury bichloride. The symptoms entirely substantiate the belief that my patient took mercury bichloride, and that she took 7½ grains at each dose, as that is the amount contained in each tablet which is used for the making of the bichloride surgical solutions. That such doses can be taken and the patient live has been several times shown when this drug has been administered by mistake. In the Reference Handbook it is stated that the intensity of action of mercury bichloride varies in its effect on different individuals. As low as 2.78 grains may produce death. Severe symptoms have followed a dose as low as ⅓ to ½ grain. Recovery has followed such enormous doses as 31 grams (nearly an ounce), when there has been prompt treatment by a physician. Opium eaters are said to be peculiarly resistant; one case with this habit being cited where 28 grains of mercury bichloride were taken daily, without illness. Assuming that this drug was what was taken, from the time of taking the first dose of bichloride, my patient never had another distinctly epileptic convulsion while she remained in the institution, a period covering over two years. She did have several hysterical seizures, which in turn disappeared under the moral treatment which has been outlined above. At the time of her discharge from the institution she had had no fits of any nature for nearly a year.

I have been able to follow the history of this patient from the date of her discharge until the present time. She went to the Azores to the home of her uncle there. She kept up a pretty regular correspondence with various persons at the Worcester Asylum. Her uncle's home not proving congenial, she found employment in a local hospital conducted by the

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Sisters. This hospital had a department where the insane were cared for. My former patient and now nurse made herself very useful there. She was not contented, however, and longed to return to America. In several of the letters received from her she asked to have money sent her so that she could come back to this country. For a time but little was heard from her, when one day she suddenly appeared in Worcester, having landed in New York the day before. She earned the money and paid her passage herself, she says. I wrote the hospital authorities in the Azores for substantiation of this story, but received no reply. It is undoubtedly true.

The patient at that time seemed perfectly well, mentally and physically. In quite a long interview with her I could detect no trace of mental defect. Her mind was acute and active. At that time she said that she had had no fits since leaving the institution and that she had very little recollection of the more excited and stormy period of her hospital residence. After a short stay with a former hospital nurse she went to a nearby city and found employment as a nurse girl in a family where she remained for some time. A letter from her employer told me that my former patient seemed perfectly well and was an invaluable nurse girl. Some two years and seven months had then elapsed since her discharge from the hospital making nearly five years in all with no known return of the epilepsy.

After one or two changes in places of employment, where she continued to do well, my patient is alleged to have suffered an assault at the hands of some unknown man. A person was accused and a court trial followed, during which the patient conducted herself in a perfectly rational manner. Failing in her attempt at conviction of her alleged assailant, she commenced to act queerly and decided symptoms of mental alienation began to appear. It was soon necessary to have her again under hospital care, where she now is. She is much depressed and has made several suicidal attempts, though not of the serious nature of her former experiences. She is quite hysterical, and has convulsive episodes, though not of a distinctly epileptic character. For a long time this case seemed to show a complete recovery from long standing epilepsy, a recovery dating from the ingestion of the massive doses of mercury bichloride. The present attack is so largely hysterical that there still seems reasonable hope that a recovery may ensue.

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PERSONALITY AND OUTCOME IN TWO HUNDRED CONSECUTIVE CASES.

By EARL D. BOND, M. D.,

Pathologist, Danvers State Hospital, Hathorne, Mass., Formerly Second Assistant Physician, McLean Hospital.

Certain ideas about the personality behind the psychosis have been brought to the attention of the psychiatrist. The theory set forth by Meyer[1] of habit-disorganization, the description by Hoch[2] of the shut-in personality, the emphasis placed by Freud and Jung on lack of adaptation in the sexual sphere, have brought into prominence mental factors and personality as causes of mental disease.

With these writers the important method of attack has been the thorough analysis of the development of unhealthy reactions in the individual case; in the present paper, on the contrary, an attempt is made to give a superficial survey of personalities and outcome in two hundred consecutive cases. Taking unselected cases written up with no special interest in personal traits, with histories coming from sources of varying reliability, it is plain that many errors will be included. But it is with such material that all clinicians are working, and it is of practical interest to see what principles shine through data that are in many respects inadequate.

I cannot find that this problem has been attacked before in this way. Hoch gives some percentages for dementia præcox cases; Zablocka,[3] in her article on Prognosis in Dementia Præcox, gives percentages of degrees of dementia in normal and other personalities; Abbot[4] and the writer have published percentages of normal and abnormal makeups in dementia præcox and manic-depressive psychosis. Such of these figures as can be compared with the results of the present study will be found in Table III.

The material is equally divided between cases from a private and a state hospital. At McLean Hospital, beginning with February 26, 1908, one hundred admissions were taken in order, only those being discarded in which no mention of the patient's personality was made by an historian not the patient. One hundred admissions from the Danvers State Hospital were collected in exactly the same way, the first entering on November 13, 1907. Traits con-

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sidered were those which existed before the apparent onset of the psychosis. The four or five years' interval from admission to the present time has in most instances allowed the outcome to be satisfactorily determined.

At the end of the paper will be found abstracts of 17 cases lettered from A to N, which are chosen to give an idea of the atypical cases considered.

The first division of the material was by disease-groups, with a cross-division of normal and abnormal, the material from the two hospitals being kept separate for comparison and to allow the figures to show percentage as well as number of cases.

TABLE I.

	Manic-depressive	Dementia præcox	Constitutional inferiority	Epilepsy	General paralysis	Alcohol	Tumor, goitre	Involution	Arterio-sclerosis	Senile	Undiagnosticated	Total
Normal:												
McLean.....	48	0	0	1	6	4	1	2	2	0	14	78
Danvers.....	22	7	4	2	7	7	2	2	1	10	6	70
Abnormal:												
McLean.....	2	8	5	0	1	0	0	0	0	0	6	22
Danvers.....	3	9	9	0	1	2	0	0	2	1	3	30

Separating from the normal group of Table I the cases definitely described as social, and from the abnormal group those definitely described as seclusive, we have Table II. Such a division is

TABLE II.

	Manic-depressive	Dementia præcox	Constitutional inferiority	Epilepsy	General paralysis	Alcohol	Tumor, goitre	Involution	Arterio-sclerosis	Senile	Undiagnosticated	Total
Social.....	19	0	0	2	2	3	1	2	1	2	6	38
Normal.....	51	7	4	1	11	8	2	2	2	8	14	110
Abnormal.....	2	5	11	0	2	1	0	0	2	1	6	30
Seclusive.....	3	12	3	0	0	1	0	0	0	0	3	22
	75	24	18	3	15	13	3	4	5	11	29	200

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possible because on listing the social cases all were found to fall within the normal group, and similarly all the seclusive cases, with possibly two exceptions (Cases D & E), were already classified under abnormal.

Thus only three persons (Cases A, B and C) are classified as seclusive under manic-depressive psychosis, and only seven as normal under dementia præcox (Cases H to K).

To read these results as percentages, and to compare them with those obtained by others, Table III is necessary. In it the consecutively chosen series of four important disease-groups are compared as to the personalities in which they arise, and paralleled as far as possible by series obtained from other writers.

TABLE III.

PERCENTAGES OF DIFFERENT PERSONALITIES IN FOUR PSYCHOSES.

	Manic-dep.	Involution Senile Arterio-sclerosis	Alcohol General paralysis	Dementia præcox	Hoch D. P.	Kirby D. P.	Hoch D. P.	Abbot and Bond	
								D. P.	M. D.
Normal.....	93	85	80	29	23	Very small	8	68	86
Abnormal..	2	15	8	20	15	..	24	12	10
Seclusive...	4	0	3	50	51	50	68	20	4
Number of cases..	75	22	28	24	72	100	38	50	50

Very striking is the agreement between the manic-depressive cases, the group with alcohol and syphilis as causal factors, and the group which has the downward changes of age as a causal factor. In contrast, the essential difference of dementia præcox stands out in all the percentages given. The present figures show a larger number of normal personalities becoming dementia præcox (Cases H to K) than do Hoch's; but the columns dealing with this disease show a more striking qualitative agreement than quantitative difference.

In conclusion the material may be viewed from another viewpoint. In the two hundred consecutive cases thirty-eight were described as social; what has become of them in the following four or five years? What has become of the seclusive cases? Table IV answers the preliminary question; in what proportions did those

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possessed of a certain kind of personality succumb to the different disease-forms?

TABLE IV.

PSYCHOSES DEVELOPED IN DIFFERENT PERSONALITIES.

Read columns down. Fractions omitted	Social	Normal	Abnormal	Seclusive
Manic-depressive	50	46	6	13
Senile, arterio-sclerotic and involution psychoses	13	11	10	0
Dementia præcox	0	6	16	54
Constitutionally inferior	0	3	36	13
Alcohol, general paralysis	13	17	10	4
Cerebral tumor or hæmorrhage epilepsy, exophthalmic goitre	8	3	0	0
Undiagnosticated	16	13	20	13
	100%	100%	100%	100%
Number of cases	38	110	30	22

The outcome in the 38 cases especially described as social may be stated as follows:

The average age at onset of first attack was 39.

19 became manic-depressive cases; of these
- 13 recovered.
- 3 died by suicide.
- 2 were deported and not again heard from, and
- 1 was discharged improved.

The average age at first breakdown was 35.

2 became epileptic at 33 and 42.

6 succumbed to alcohol, syphilis, or general paralysis, at an average age of 35.

5 reached the average age of 65 before succumbing to psychoses characteristic of the involution period.

6 remained unclassified; of these
- 3 recovered.
- 3 left the hospital and are lost.

The average age at first attack was 35.

Similarly, the outcome in the 22 cases described as seclusive is as follows:

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The average age at onset of first attack was 26.

3 became manic-depressive cases and recovered, average age 33. (Cases A, B and C.)

12 became dementia præcox; of these
- 2 died.
- 10 remain in the hospital.

3 were constitutionally inferior and were not reckoned in the age averages.

1 acquired acute alcoholic insanity at 37, and recovered; the meagre description reads only "melancholy and reserved."

3 remain unclassified; of these
- 1 died, "always abnormal," worse at 53 (Case N).
- 1 discharged "much improved" and lost, onset at 19.
- 1 still in hospital, onset at 35.

Between these two groups there is a striking difference as regards hospital residence. The social personalities have been able to last 13 years longer than the seclusive without breaking down. Leaving out those cases evidently inferior from birth, those in whom there is an evident exogenous causal factor (alcohol, syphilis), and those who have been able to reach the declining years of life without upset, we find 50 per cent of the seclusive group still under institutional care in contrast with only 2½ per cent of the social group.

Summary.

1. Four tables are presented which show personalities and outcome in 200 consecutive cases.

2. Seventy-four per cent of these are found described as normal, 26 per cent as abnormal; 19 per cent as social, 11 per cent as seclusive.

3. Dementia præcox is seen to differ sharply from manic-depressive, alcoholic, post-syphilitic and involution period psychoses in regard to the personalities in which it is found.

4. Normal personalities are noted in 93 to 85 per cent of manic-depressive, alcoholic, paretic and involution period psychoses; but in only 29 per cent of dementia præcox cases.

5. Seclusive personalities are noted in less than 4 per cent of manic-depressive, alcoholic, paretic and involutional period psychoses, but in 50 per cent of dementia præcox cases.

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6. As regards hospital residence only 2½ per cent of the social cases, in contrast to 50 per cent of those who showed a seclusive tendency, are still in the hospital at the end of a four-years interval.

ABSTRACTS OF ATYPICAL CASES.

CASE A.—Male; 20; family history good; born after normal labor; a well baby; slow in learning to talk; bashful; could not learn with people about him; never did consistent or steady work; not fond of sports or his fellows; was restless; sat by himself; was thoughtless; kind hearted; fond of novels; never physically sick; of late has used much tobacco and accuses himself of masturbation.

Two years before entrance had slow fever. After slow fever came a mild excitement for a year, then a depression, another excitement, another depression.

After two months stay at the hospital he was discharged as recovered. Was admitted again in an excitement in 1911 and discharged early in 1912; again recovered. He was very sociable and open in his excitements when seen at the hospital; he made many friends. *Seclusive; M. D.*

CASE B.—Male; 27; father very nervous; a normal baby; very sensitive to slights; had not many friends or new interests; up to 23 his only exercise was walking; since then he has taken up swimming; very fond of books and of the theater, but preferred gloomy plays; after his mother's death and the burning down of his home he became self-accusatory, retarded, hallucinated. He recovered after nine months. *Seclusive; M. D.*

CASE C.—Married woman, age 55, who was never physically well as a child; easily offended; over-estimated the faults of others; very positive; not sociable to most people; hard to those she disliked; preferring to be left alone, but very cordial to a few intimate friends. After unhappy experiences, dream-like manic state, distractability, flight of ideas; discharged well after ten months. *Seclusive; M. D.*

CASE D.—A married woman, age 35; bright; quick; high strung; nervous temperament; quick to anger; quick to get over it; not inclined to worry; very sensitive make-up; not especially fond of society or theater; liked tragedies; read serious things; rode horse back; occasionally drank; has ups and downs in mood; a typical manic case with good recovery.

This is a case showing the "artistic temperament" and seclusive traits, which still do not keep her from touch with the world; this and the next case are the most doubtful of all those classed as *normal; M. D.*

CASE E.—Male; age 22; considered normal as a boy; fond of outdoor sports; learned well; rather methodical in his studies; probably a little seclusive; at 8 showed abnormal sorrow for his mother's death; at Exeter was honor man at 17; conscientious; several definite manic and depressed attacks with perfect recovery. Classed as *normal; M. D.*

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CASE F.—Married woman; age 34; quiet, unassuming, not caring much for companions but always bright and active; always well; was organist at church; a long drawn-out attack, mixed phase, followed by recovery. *Normal; M. D.*

CASE G.—Male; age 42; as a boy normal and bright; rather seclusive and gloomy; never held a responsible position; studied law but never practised; good student of languages; belonged to several clubs; used alcohol and tobacco; went with women. *Abnormal; G. P.*

CASE H.—Married woman of 35; one sister insane; a hard working, always cheerful woman who liked company; at 29 obscure delusions of infidelity; hallucinations; somatic delusions; untidy; becoming more and more apathetic. At present more demented; in the hospital. *Normal; D. P.*

CASE I.—Married woman; 34; good family history; a healthy child; bright scholar; quick tempered and impulsive; rather inclined to worry; insistent on cleanliness; very proud of her family; quite cheerful and sociable; after four years stay in the hospital, disoriented, apathetic. *Normal; D. P.*

CASE J.—Married woman, 44; average ability; doing well as a servant; always quiet; even temperament; of average religious feeling; now demented and still in the hospital. *Normal; D. P.*

CASE K.—A male of 42; bad family history; cheerful, amiable, agreeable; an only son; very precocious; affectionate; unusually sensitive; very popular and made every one his friend. After 22 years of hospital residence he shows many mannerisms; foolish delusions of grandeur. He was called *normal; D. P.*

CASE L.—Male of 53; bad family history; very timid; too timid to plead in court; reserved; unsociable; suspicious; bright lawyer. At 36 his suspiciousness increased and probably he then began a paranoid dementing process during which he was an inmate of at least eight hospitals. At 50 he is still in a hospital. Classified as *seclusive, undiagnosticated.*

CASE M.—Male, 41; fairly healthy, getting little out of his school work; wilful; truant; wanted his own way; fought so much that other boys feared him. Later an active church member; a very good man. At 35 peculiar and jealous; at 41 exhilaration then depression; at 42 constantly hallucinated; at present in hospital, showing delusions of poisoning. *Abnormal; D. P.*

CASE N.—Male, 53 on admission; always eccentric; never cared for company or women; masturbated from 12 on; talked to himself as a young man. At 53 lost interest in his farm work, thought he was to be burned at the stake, in hospital resistive, unoccupied, suspicious and apprehensive till his death 13 years later. *Seclusive; undiagnosticated.*

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POLYNEURITIC DELIRIUM—KORSAKOFF'S PSYCHOSIS.*

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The polyneuritic or Korsakoff's psychosis has been recognized for many years. Although much has been written in regard to this interesting condition there are a number of disputed points and differences of opinion especially as to etiology prognosis and even as to the existence of such a disease entity. Moreover, when the frequent resemblance to severe organic states is considered the importance of a careful study of this psychosis must be realized.

It is not the purpose at this time to enter into a detailed discussion of Korsakoff's disease in all its aspects. Following a description of the symptom-complex a few of the more undecided points will be considered, especially emphasizing the results of an examination of a series of cases at the New Jersey State Hospital at Trenton.

In general, the symptoms may briefly be stated as delirium with confusion, disorientation, memory disturbances (Merkfahigkeit), with fabrications and pseudo-reminiscences, amnesic periods, hallucinations and delusions.

The mode of onset is somewhat varied. According to some authorities there is apt to be a prodromal period of irritability, nervousness and either insomnia or drowsiness, the latter in many cases being a profound stupor. Following sooner or later the patient enters into a period of active delirium varying in degree from a mild confusion and disorientation with hallucinations to a severe condition resembling the typhoid state.

Again, the case may begin with severe neuritic symptoms obscuring the mental phenomena which appear later. Still a third method of onset according to Bonhoeffer is a slowly developing increasing memory weakness.

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A most usual mode of onset is that of an acute delirium resembling a delirium tremens in many ways. Because of this, and the continuance of the symptoms, some writers have suggested calling the condition "chronic delirium tremens." The patient becomes confused, disoriented, irritable and apprehensive, fearing he is to be harmed. He has horrible hallucinations of sight and is unable to sleep. He talks constantly to himself. Unlike delirium tremens, as Lambert has pointed out, the critical sleep does not appear. As soon as the acute stage is over the characteristic mental symptoms ensue. The demeanor of the patient may not be far from normal to a casual observer, but a few questions will disclose the peculiar state of mind. There is practically complete disorientation. The patient does not realize his surroundings. Although he may have been in the hospital in bed for some weeks, he thinks he is at home or at his place of business. He has no idea of time, the present date or the period during which he has been sick. On the other hand, he may recognize his friends, but in severe cases even recognition may also be disturbed.

The memory disturbances form the most peculiar and distinguishing feature of the disease, the memory for the immediate past being markedly defective. The patient is unable to retain the most recent occurrences. He cannot recall what has just been said to him (Merkfahigkeit). He does not know what has taken place the moment before, to whom he has been talking or what has been done. He may ask repeatedly the same questions and no amount of emphasis will enable him to remember what he is told.

The memory for earlier events is usually retained up to the onset of the sickness, although the amnesia may be retrograde and involve some time before the beginning of the trouble. In other cases the memory for past events may be quite perfect, although the sequence may become disordered, the patient for instance naming his different occupations or places of residence in the wrong order. Again, there may be only partial memory, unaccountable lacunæ or gaps occurring in his recollection.

Related to the amnesia and probably resulting from it and being perhaps an effort to cover up or fill in the gaps are the pseudo-reminiscences, memory fabrications or falsifications. While the patient may have been confined to his bed for weeks, yet he describes journeys he has taken, people he has met, business deals,

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details of work, conversations and various other things that have transpired which are entirely imaginary. These circumstances he will relate in detail, readily adding to the story at the suggestion of the physician.

The physical symptoms of neuritis may or may not be marked. Cases presenting the mental phenomena may show none of the characteristic signs of neuritis, or the symptoms may be overlooked, or may have passed away before the onset of the psychosis. The symptoms vary from only slight sensory disturbances to a severe state with paralysis and contractures. It is common to find pain and tenderness over nerve trunks and muscles upon pressure, especially over calves and biceps. The deep reflexes are apt to be diminished, absent or variable with wrist or ankle drop or both in the severest cases. There may be incoordination in bringing finger tips together or touching nose with eyes closed. The wasting of muscles is usually quite noticeable.

Pupillary disturbances are frequently present. Irregular, unequal pupils which may react sluggishly to light or not at all are found. Speech defects varying from simple thickness to an actual slurring are not uncommon.

The neuritic symptoms are usually most marked during the severe delirium and are disappearing or absent when the fabrications become well developed. Frequently the anamnesis has to be depended upon for the evidence as to a neuritis having been present.

In regard to etiology, alcohol was at first and for a long time deemed the most important if not sole factor. From time to time, however, cases would appear presenting typical symptoms of polyneuritic delirium in which there was absolutely no alcoholic history. Cases may be divided into three classes as to etiology. In the first place, those with alcoholic alone as the etiological factor are by far the most numerous and typical. As will be noted in the series under examination, alcohol was given as the cause in 75 per cent of the cases.

Again, alcohol may be associated with some chronic wasting disease, an infection or a traumatism.

Lastly, cases are recorded where alcohol has played no part in producing the disease. There seems to be an underlying basis of toxæmia due to other causes. Morphine, creosote, arsenic and

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other poisons, tuberculosis, typhoid fever, puerperal fever, diabetes, gastroenteritis, malignant growths, etc., have all been given as the sole cause for polyneuritic delirium. It is a question whether or not all these cases should be called polyneuritic delirium. Where there are no physical signs of a polyneuritis and really the clinical picture of a delirium as in a wasting disease, with fabrications, why should this delirium be specially designated apart from that which could be explained by the basic disease?

In a chronic disease, such as tuberculosis with the appearance of a neuritis, care must be exercised not to mistake the cause of this condition. This was clearly shown by Salomonson who described "two cases of toxic polyneuritis in phthisis," and concluded that the polyneuritis was due to the creosote given and not to the tuberculosis *per se*.

The case described so fully by Hayman seems to have been a true example of polyneuritic delirium on a morphine basis, there being no alcoholic history. The physical signs included absent knee and achillis reflex, sluggish pupillary reaction, speech and writing defects, and mentally there were present the characteristic memory defects with confabulations.

Some investigators have found that Korsakoff's psychosis more commonly occurs in women than in men. Long-Landry in the "Clinic" of Paris states that "women are attacked in the proportion of seven out of ten cases." Stanley, in a recent paper, makes a similar assertion. Paton, however, reaches the opposite conclusion, and this seems to be borne out by the present series. When the fact that alcohol is the most common etiological factor is considered, it would seem reasonable to find the disease more often in men.

Pathologically considered, the characteristic findings expected in a case of multiple neuritis are seen together with certain other changes. F. Robertson Sims, in the cases he examined, found "acute degeneration of many peripheral nerves, axonal reaction in anterior horn cells, in cells of Clarks column and in some cranial nerve nuclei and various non-systemic degeneration of intra-spinal fibers, together with acute or axonal alterations of various cells of the cortex. In one case proliferating glia cells were found in the neighborhood of altered Betz cells of the motor cortex."

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The following case is reported in abstract, as a post-mortem examination was made:

C. K. Female. Born in United States. Age 30. Divorced.

Family History.—Negative.

Personal History.—Early life not unusual. Made good progress in school and took up music, remaining at home until her marriage at the age of 21. The marriage was regarded as satisfactory, but later on it was discovered her husband drank to excess. Since her marriage she has had four abortions induced with the knowledge and consent of her husband and they both have had gonorrhœa. She acquired the habit of drinking, and two years ago her husband parted from her, the grounds being her excessive drinking. Four months before admission he got a divorce and was married the following day. She (the patient) drank to excess following this, as much as a quart of whiskey a day.

Onset.—About four months ago began to be rambling in her talk, indifferent to her work. Twenty-five days before admission began to have hallucinations of sight, seeing monkeys in the trees, negroes coming in through the windows, etc. She did not seem frightened or tremulous. This lasted about a day and her physician gave her bromides after which she talked in a wandering way and was untidy. Was in a general hospital ten days before admission.

Admitted February 4, 1911.—Carried in on a stretcher, was stuporous and could not be aroused.

Physical Examination.—Height about 5 feet four inches, weight about 125 pounds. Patient semiconscious and delirious. Much atrophy of muscles of arms and legs. Excessive pain upon pressure over calves and biceps. There is double foot drop. Patellar and achillis tendon reflexes absent. Marked incoordination and tremor of extended fingers. Inability to stand. Speech slurring. Loss of control of bladder and rectum. Pulse weak, intermittent, rate 120. Pupils active. Tongue coated, breath foul. Urinalysis, 1030; acid. Heavy white ppt.; reddish amber. A trace of albumin. A yellowish offensive vaginal discharge.

Mentally patient in delirium, apathetic and indifferent to surroundings unless disturbed, when she cries out with pain. Answers to questions mostly incoherent and irrelevant. Fabrications quite marked. Hallucinations of sight and hearing. Complete disorientation. Marked memory disturbance. Lack of insight and judgment. Lumbar puncture findings were negative and general paralysis ruled out. Patient failed rapidly and died February 10, 1911.

I am indebted to Dr. F. S. Hammond, pathologist to the New Jersey State Hospital at Trenton, for the autopsy report and microscopical findings hereafter recorded.

The anatomical diagnosis was as follows:

A young white woman showing well marked muscular atrophy without evident significant loss of fatty tissue.

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Dura and pia microscopically negative. Beginning basilar arteriosclerosis as shown by small patches of grayish white color in the major trunks.

Brain of small size with reduced consistency without detectable atrophy or other gross changes—1120.

Spinal cord removed. Negative to naked eye.

Subacute bilateral plastic and fibrous pleurisy. Rather well marked bilateral posterior hypostasis and œdema with areas of collapsed tissue and beginning broncho-pneumonia.

Slight mitral and aortic endocarditis of chronic type. Heart muscle markedly grayish and turbid. Left ventricle only partially contracted. Much subepicardial fat.

Incipient aortic atheroma. A few small scattered patches only. Coronaries clear.

Moderate splenic engorgement.

Rather well marked chronic interstitial hepatitis. Old adhesions about the upper and under surface of liver. Perhaps some cloudy swelling.

Stomach and intestines negative except for slight or moderate injection of mucous membrane.

Kidney usual size. Capsule firmly adherent. Substance of kidneys dark turbid red. Cortex bulges beneath capsule when cut.

Pancreas negative.

Adrenals show apparently some engorgement of the medulla and some central softening. Cause of death polyneuritic delirium (chronic diffuse nephritis with acute cloudy swelling).

MICROSCOPIC EXAMINATION.

Brain.—Nissl: Aside from the special alterations present in the large cells of the paracentral lobules and to a less degree elsewhere, on the whole there is quite good preservation of nervous elements. Pigmentation is not unduly conspicuous and with the exception of an occasional cell displaying the effects of granular disintegration there is little of significance in either the general run of cells glia or vessels.

The Betz cells, and to a considerably less degree the large cells in the calcarine areas, are the seat of a quite distinct axonal reaction. The principal features of this condition are that by no means all the large cells are affected and those in which the process is observed do not display the intense granular breaking up of the Nissl bodies and peculiar glassy appearance of the cell body usually seen in central neuritis. Although the nucleus is displaced and the chromatin altered, the process lacks the severity usually observed.

By Marchi, the paracentrals show very distinct fiber degeneration corresponding in severity to the axonal reaction in the cells. In the frontal and temporal areas the osmic spotting is quite strikingly small as compared to the paracentrals.

Spinal Cord.—Nissl: A well marked axonal reaction in the anterior horn cells most conspicuous in the dorsal and cervical regions. Pal: A

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quite distinct thinning out of the columns of Goll in the dorsal and cervical segments not present in the lumbar segments. Marchi: Well marked peppering of the white matter throughout the upper levels, but distinctly more pronounced in the posterior columns and lateral marginal zones in the dorsal and cervical and noticeably less so in the lumbar.

Lumbar Ganglia.—Negative.

Gasserian Ganglia.—Negative.

Medulla.—Nissl: Moderate amount of nerve cell pigmentation. Marchi: Rather small amount of reaction noticeable; very much less than in the cord.

Peripheral nerves.—(Right and left—great sciatic, ulnar, median, posterior tibial, bracheal plexus.) Nissl: Sections negative.

Marchi: In the nerves of the lower extremity a quite faint (or even doubtful?) reaction. A rather limited number of fine black pepperings. In those of the upper extremity, the medians particularly, a very evident reaction as shown by many plainly detectable black dots, clump and linear markings.

Spleen.—Chiefly characterized by marked engorgement of the pulp.

Lungs.—Mild grade broncho-pneumonia.

Pancreas.—Negative.

Thyroid.—Negative.

Adrenals.—Negative.

Heart.—Negative by eosin and thionin.

Kidneys.—Well marked chronic interstitial nephritis with high grade acute cloudy swelling.

Liver.—High grade periportal cirrhosis and fatty infiltration.

Pituitary Body.—Negative.

Small Intestine.—No changes of significance.

Left and Right Biceps, Left and Right Gastrocnemius.—Negative.

Before a further general consideration of Korsakoff's psychosis it may be well to analyze briefly the series of cases which have offered the excuse for this discussion.

There were 24 cases, 17 men, seven women. The ages of the men ranged from 30 to 68, those of the women from 30 to 48. Alcohol seemed the most important etiological factor in 14 of the men, and four of the women. In two male cases alcohol and trauma and alcohol and infection were associated. In one male case bromides, and in a female chloral and bromides, seemed to be the active causes. In one female the trouble started following an induced abortion with probable infection and exhaustion. In another, worry, grief and ill health.

The onset in 13 cases was acute, many times resembling delirium tremens at first, which became chronic. To be exact, the

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onset in these was three weeks or less. In six cases the symptoms developed in from four to seven weeks, and in five cases they were several months in making their appearance.

In 62 per cent there were decided pupillary changes and in 87 per cent there was reflex alteration.

The neuritis was so marked in nine of the males and five of the females that the patients could not walk or help themselves in any way. Seven of the male and one female case did not have hallucinations. All but one (a female) showed fabrications, this one case having passed beyond that stage. All but this same case showed disorientation, retention defects and amnesia.

Twenty or 83 per cent recovered, 15 males and five females. One male only died, the cause being lobar pneumonia. Two females died, one of these having a severe chronic nephritis, the other being the case already reported under pathology.

Seven cases, two being women, were lumbar punctured, the spinal fluid findings being in each negative.

The importance of a careful differential diagnosis cannot be emphasized too strongly. Even with a fairly accurate anamnesis, one cannot always feel certain that the case is one of Korsakoff's psychosis, and without a good anamnesis the difficulties are multiplied. When it is seen that in the writer's cases 62 per cent showed pupillary changes, *e. g.*, either irregular, unequal or sluggish in reaction, 87 per cent reflex alteration besides tremors, writing and speech defects and incoordination, and frequently these physical signs are accompanied by expansive ideas, the possibility of confounding Korsakoff's psychosis with general paralysis is apparent.

In this connection it is interesting briefly to note two cases of the series. The following is not included among the 24 already mentioned.

Psychosis in Z. T. Colored, male. Age 49. Widower. Laborer.

Family History.—Negative so far as known.

Personal History.—Early life not unusual. Received a public school education and possessed ordinary intelligence. Has been drinking more or less all his life, for ten years to excess. Never arrested for disorderly conduct but frequently warned. Has been employed as a laborer, waiter, porter, etc. Agreeable disposition. Provided for his family.

Onset.—About four weeks before admission. Had been drinking to excess and had a convulsion about that time and another September 25,

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1910. Was confined to bed and attended by a physician. A few days later was restless, violent and restrained. Gradually became more quiet and able to be on his feet, but weak and not right mentally.

Admitted to the New Jersey State Hospital October 20, 1910. Was disoriented.

Physical Examination.—Thin in flesh, poor muscularity. Sways when walking without assistance. Romberg symptom present. Speech defect. Tremor of extended fingers and toes. Patellar reflexes exaggerated. Tenderness over nerve trunks and muscles of upper and lower extremities.

Mental Status.—He was usually quiet, at times restless, wanting his clothes to go to work, etc. Talks spontaneously and answers questions relevantly. His mood was agreeable; at times he would become emotional, readily shedding tears. There were marked fabrications. Complete disorientation. No insight.

The diagnosis at first favored was Korsakoff's psychosis.

The fabrications continued but were not so marked.

His physical condition seemed to be improved. On January 25, 1911, he had a convulsion which was at first attributed to uræmia. The urinalysis, however, did not confirm this. He recovered to his former condition and lumbar puncture was performed. The spinal fluid proved positive for general paralysis, there being 293 cells to the cmm. The patient finally died and autopsy confirmed this diagnosis.

About the same time the following case was presented at staff meeting making a striking contrast to the above:

N. A. Psychosis in white man. Age 56. Married. A motorman.

Family History.—Negative except for the fact that his wife had three miscarriages.

Personal History.—Childhood and early life negative. Has worked at several occupations, farmer, engineer, etc. For the past 15 years has been employed as a trolley motorman. Married at the age of 24. Has never used alcohol. A steady and industrious workman. Always got along well with his wife. For the past 15 years has had a sore on lower leg which would break down about once a year. Had a bad attack of pneumonia last winter.

Onset.—Gradual. About ten weeks before admission began to talk and act a little queerly. Was obliged to stop work at that time because he was ill and nervous. Was quite restless. Must be moving about all the time. Had been given considerable bromide by physician's prescription, the same being renewed several times. About three weeks before admission became profane, talked of having large sums of money, owning a hotel at Atlantic City. Was at times emotional. Hallucinations of sight were present. Feared his imaginary money would be stolen. Showed fabrication.

Admitted to the New Jersey State Hospital January 24, 1911. Disoriented.

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Physical Examination.—A well developed white man. Numerous white pitted scars over back and chest and arms. Ventral hernia at site of old abdominal operation (12 years ago for intestinal obstruction). No scars on genitals. Smell defective. Left pupil slightly larger than right. Reacts more sluggishly. Neither pupil gives a prompt reaction. Taste defective. Sense of position poor. No tenderness over nerve trunks or muscles. Patellar reflexes absent. Other reflexes are diminished. Balancing power very poor. Unable to walk in a straight line with eyes closed. Tremor of tongue and fingers. Writing and speech defects. Speech of scanning type. Heart sounds muffled and indistinct. Pulse slow and irregular. Urine contains albumin and casts.

Mental Status.—Restless, difficult to keep in bed, headstrong and obstinate. Disoriented. Memory defects. Emotionally changeable. At times exhilarated and often tearful. Expansive, ideas of possessing wealth. Fabrications, speaking of having been at various places, seeing various people and having different imaginary experiences.

From the marked physical signs and expansive ideas general paralysis was favored at the first presentation, but lumbar puncture was negative. The negative spinal fluid findings made the diagnosis Korsakoff's psychosis necessary. This patient finally made a complete recovery.

Thus, very graphically, the difficulties at times experienced in differentiating polyneuritic delirium from general paralysis and the important laboratory aid to this solution are shown.

A number of cases of Korsakoff's psychosis were lumbar punctured and pleocytosis was never discovered. Certain writers, I. M. Dupain and G. Lerat, claim to have found lymphocytosis in polyneuritic cases, but they have not recorded any differential cell count which would be important in such circumstances.

The possibility of Korsakoff's psychosis occurring in a general paralytic has been demonstrated.

The case Z. T., already cited, might be considered one of this kind. Kræplin showed the association of these two conditions.

Henderson of the New York Psychiatric Institute reported two such cases, one in 1909, another in 1910. One of these was a hack driver, 54 years old. He had a double wrist and foot drop, tenderness over calf muscles, marked exaggeration of the tendon reflexes. Pupils reacted promptly to light and accommodation. There were memory disturbances. The polyneuritic symptoms disappeared in a week's time.

The lumbar puncture showed a pleocytosis, positive globulin reaction and positive Wassermann of the blood serum and cerebrospinal fluid.

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Cases of this sort are the exception, however, and it is generally conceded in this country at least that lumbar puncture in polyneuritics shows no pleocytosis, thus making this diagnostic aid of vital importance.

Senile dements may fabricate and present amnesia and memory disturbances similar to those found in polyneuritic delirium. In senile cases, however, the gradual onset, age of the patient, continued progressive deterioration, absence of neuritic symptoms, serve to differentiate this condition.

Certain traumatic psychoses, according to A. Meyer, present features of the Korsakoff's symptom complex, especially the fabrications and memory disturbances.

The following case very aptly illustrates the complication of a trauma:

E. W. White. 48. Widower.

Family History.—According to patient, father and brother alcoholic.

Personal History.—Patient picked up June 2 along trolley track with a fractured skull, punctured wound. Taken to Mercer Hospital where skull was trephined, left frontal prominence, and a small piece of bone removed. Patient became violent, was disoriented, evidently fabricated.

Onset.—June 2, so far as known.

Admitted to the New Jersey State Hospital June 19, 1910. He was talkative, good humored. Disoriented. Fabricated.

Physical Examination.—A fairly well nourished white man, height 5 feet 8 inches, weight 147 pounds. A history of venereal scars probably chancroidal in nature. Irregular scar about six inches long forming a flap over left eye, surrounding an irregular depression in skull, left frontal prominence, following trephining. Pupils unequal, left a little larger, irregular in outline, do not react to light. Unable to test well for accommodation. Slight external strabismus. Tactile, temperature and pain sense acute except in region of scar, left side of forehead. Considerable pain and tenderness upon pressure on calves. Reflexes less active on the right. Station unsteady. Swaying to left in Romberg position. Gait unsteady and staggering. Muscular power of legs seems diminished, does not keep them flexed well. Some difficulty in pronouncing "Peter Piper." Does not sleep well. Heart sounds weak and indistinct. Pulse 68, small, compressible, rather weak. A history of hemorrhoids. Liver dullness extends to umbilicus. Urine: light straw, turbid, 1010, acid: *microscopically,* bacteria present.

Mental Status.—A little restless and confused. Disoriented, fabricating freely according to suggestion until about July 4, when he became oriented for time and place. Mood, rather happy. Amnesic period for accidents and events following same. Confused in his accounts of his previous life.

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Memory poor but improving. Retention fair. School knowledge fairly good. Insight and judgment defective.

It was learned from his employer that he drank to excess.

From the history of alcoholism, neuritic physical signs above enumerated which seemed to be clearing up, confusion, disorientation, marked fabrications, defective insight and judgment, alcoholic polyneuritic delirium, Korsakoff's psychosis was favored.

General paralysis would have to be considered but was excluded by recovery and discharge August 15.

The influence of the trauma was thought to be incidental or as the exciting cause. In the light of A. Meyer's teaching, however, it may be questioned whether or not the trauma was the cause of the peculiar delirium.

One case (McG.), age 65, on account of a history of several periods of unconsciousness, apprehension, irritability and partial disorientation with defective insight, arterio-sclerotic brain disease was considered. Later on, however, fabrications developed, the symptoms finally clearing up in the course of two months, and the patient was discharged, the diagnosis being Korsakoff's psychosis.

A mistake was probably made in the case in the first place in considering arterio-sclerotic brain disease without sufficient evidence of shock or with no residual focal symptoms of the same.

A brief recital of some of the opinions as to prognosis discloses a decided difference among the various writers. The leaning seems to be toward a bad prognosis and practically all have been unanimously guarded in their expressions.

Paton states that "certain writers hold that complete recovery sometimes takes place, an affirmation which I am at present unprepared either to accept or reject."

Hurd reported five cases with only two recoveries. In his monograph Hurd says he thinks "with persistent care and intelligent treatment, the prognosis may be made better than usually considered."

Stanley says in a recent paper "the prognosis is unfavorable. The disease rarely if ever terminates in complete recovery and may prove fatal in its early or later stages. The course is apt to be prolonged, resulting in the most favorable cases in more or less impairment of memory and emotional deterioration."

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Kraeplin states "some patients recover after several months. Sometimes an incurable mental weakness is developed."

Other clinicians go so far as to say they have never seen a case of Korsakoff's psychosis make a complete recovery.

In the present series of cases it has been stated that 20 out of the 24 recovered. Most of them left the hospital and resumed their former occupations, to all appearances being in as good condition as before the psychosis. Of course, "if the persistence of some slight psychic defect" should make it necessary to call the case not cured, as Paton suggests, probably a majority of alcoholics would be so considered, as doubtless all have suffered some deterioration. One case remaining in the hospital is that of an old colored man with no friends to take care of him outside, but who is now in a normal mental condition. One of the 24 is still in a more or less delirious condition. Two of the three deaths could not be laid to the polyneuritic condition altogether, as one was caused by lobar pneumonia, the other by severe chronic nephritis.

In view of spinal fluid findings one may perhaps account for some cases of reported recovery of general paralysis by the possible fact that those cases were Korsakoff's psychosis in which lumbar puncture was not performed. And vice versa, some cases of Korsakoff's disease which failed to recover may have been general paralysis in which also lumbar puncture was neglected.

It is the writer's opinion, therefore, that the prognosis in polyneuritic delirium is generally better than has been stated in the books. It must be remembered the patients may die "during the delirium from some intercurrent complication" such as pneumonia or nephritis.

Active and careful nursing and general treatment will do much to improve the prognosis. Rest in bed is imperative and the prompt withdrawal of all alcohol indicated. A diet of milk and broths, plenty of water internally, remedies to stimulate the excretory organs, hot packs or warm baths if necessary for sedative and eliminative purposes, purgatives all have their routine uses. For profound toxæmia enteroclysis of normal salt solution is effective. The usual sedative remedies, *e. g.*, the bromides, chloral, etc., are to be used as indicated, as also the hypnotics trional, sulphonal and veronal. As the delirium passes away and

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POLYNEURITIC DELIRIUM-KORSAKOFF'S PSY-

Case.	Sex.	Age.	Occupation.	Etiology.	Pupils.	Reflexes.	Nerve tendencies.
T. C.....	M.	43	Farmer.....	Alcohol.....	Unequal.....	Much dim.....	Yes...
J. C.....	M.	35	Bartender....	Alcohol.....	Normal.....	Much dim.....	Yes...
M. McG...	M.	65	Miner.....	Alcohol.....	Sluggish.....	Fair reaction...	No....
P. L.....	M.	68	Laborer.....	Alcohol.....	Contr., unequal.	Unequal.....	Yes...
J. D.....	M.	55	Plasterer.....	Alcohol.....	Reaction limited.	Dim.....	Yes...
M. F.....	M.	60	Hotel keeper.	Alcohol.....	Reaction limited.	Increased.....	Yes...
P. J. (col).	M.	56	Coachman....	Alcohol.....	Sluggish.....	Increased.....	Yes...
E. W.....	M.	48	Candy maker.	Alcohol and trauma.	Unequal, sluggish.	Rt. dim.....	Yes...
C. R.....	M.	54	Butcher.....	Alcohol and infection.	Unequal, sluggish.	Active.....	Yes...
F. P.....	M.	32	Clerk.....	Alcohol.....	Sluggish.....	Active.....	Yes...
Z. T. (col).	M.	49	Laborer.....	Alcohol.....	Active.....	Increased.....	Yes...
N. A.....	M.	56	Motorman....	Bromide (?)....	Unequal, sluggish.	Absent.....	No....
J. F. (col).	M.	33	Waiter.....	Alcohol.....	Active.....	Dim.....	Yes...
L. T.....	M.	63	Carpenter....	Alcohol.....	Active.....	Increased.....	Yes...
J. S.....	M.	49	Barber.....	Alcohol.....	Contracted.....	Almost absent..	Yes...
J. G.....	M.	42	Machinist....	Alcohol.....	Active.....	Absent.....	Yes...
G. W.....	M.	30	Grocer.....	Alcohol.....	Active.....	Absent.....	Yes...
J. M.....	M.	54	Laborer.....	Alcohol.....	Sluggish.....	Increased.....	Yes...
E. F.....	F.	43	Housekeeper.	Alc. gastritis...	Active.....	Increased.....	Ye...
E. L.....	F.	36	Housekeeper.	Alcohol.....	Active.....	Increased.....	No...
C. K.....	F.	30	None.....	Alcohol.....	Active.....	Absent.....	Ye...
S. P.....	F.	36	Housewife...	Following curretage.	Active.....	Absent.....	Ye...
A. M.....	.	39	Housewife...	Grief, ill health.	No reaction to light.	Increased.....	Ye...
M. W.....	F.	45	Waitress.....	Alcohol.....	Sluggish.....	Increased.....	Y...
E. D.....	F.	48	None.....	Chloral and bromide.	Sluggish.....	Increased.....	Y...

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PSYCHOSIS. W. C. SANDY, M. D., TRENTON, N. J.

Speech and writing defects.	Hallucinations.	Fabrications.	Disorientation.	Retention defect.	Amnesia.	Onset.	L. P.	Duration.	Results.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 weeks.....	.....	2 months.....	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	1 week.....	.....	1 month	Rec.
No..	Yes.	Yes.	Yes.	Yes.	Yes.	2 weeks.....	.....	8 months	Rec.
Yes.	No..	Yes.	Yes.	Yes.	Yes.	6 or 7 weeks....	Negative	6 months	Rec.
Yes.	No..	Yes.	Yes.	Yes.	Yes.	10 days	.....	.....	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 weeks.....	Negative	3½ months	Rec.
Yes.	No..	Yes.	Yes.	Yes.	Yes.	3 weeks.....	.....	11 months	Rec.
Yes.	No..	Yes.	Yes.	Yes.	Yes.	2 weeks.....	.....	2 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Sev. months (?)	.....	2½ months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	7 weeks.....	.....	2½ months	Rec.
Yes.	.....	Yes.	Yes.	Yes.	Yes.	4 weeks.....	Positive (G. P.)	.....	Died.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	10 weeks.....	Negative	6 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 weeks.....	.....	1½ months	Rec.
Yes.	No..	Yes.	Yes.	Yes.	Yes.	4 weeks.....	.....	5 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 months (?) ...	.....	4 months	Died. Lobar pneumonia.
Yes	(?)	Yes.	Yes.	Yes.	Yes.	2 weeks.....	.....	Still in hosp..	
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 weeks.....	Negative	2 months	Rec.
Writing	No..	Yes.	Yes.	Yes.	Yes.	3 weeks.....	.....	3 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	5 weeks.....	.....	3 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	3 weeks.....	.....	3 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	4 months.....	Negative	6 months	Died.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	10 weeks.....	Negative	4 months	Died. Chronic nephritis.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes	3 months.....	.....	3 months	Rec.
Yes.	No..	No..	Yes.	Yes.	Yes.	4 weeks.....	.....	3 months	Rec.
Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	5 weeks.....	.....	2 months	Rec.

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if there is much heart weakness during the active delirium the stimulative effect of strychnine and digitalis is beneficial.

During convalescence, massage and passive motion are necessary to overcome the effects of the neuritis. Daily suggestion and correction of the patient's false ideas are useful in hastening the restoration of his mental equilibrium.

In conclusion, there is no doubt in the writer's mind that Korsakoff's psychosis is a distinct entity, at least from an alcoholic standpoint.

It must be admitted, however, that the symptom complex, *i. e.* memory disturbances and fabrications, is seen in other conditions, but an analysis of the cases should usually serve to differentiate such conditions. Again, it has been shown that Korsakoff's psychosis may be present in combination with some other more chronic and lasting disease.

The prognosis would seem to be more favorable than usually stated.

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A BRIEF REPORT OF TWO INTERESTING CASES OF MELANCHOLIA.*

By C. A. PORTEOUS, M. D., Montreal, Can.

The two cases of melancholia described in this report are of more than ordinary interest mainly from their unusually lengthy duration followed by recovery without any evidence of dementia; from the psychic negativism shown so prominently in both, particularly in the case of the woman; and by reason of the late age when recovery occurred after the chronicity which had been established in the disorder.

Case I.—H. T., male, æt. 47, admitted to Verdun Hospital May 18, 1897. Married 17 years, has four children. Nativity, England. Parents dead. Occupation, accountant; higher education, having studied and passed examination for the degree in surgery in London, Eng., though he never practiced. Heredity: A history of "nervousness" in mother and one maternal cousin, also maternal uncle. This is the first attack and began one month before admission to hospital; patient always spoken of as slightly eccentric. Moderate user of tobacco and spirits; reported to have had one syncopal attack, epileptiform in character about the age of thirty, none observed since. Has during the past month become depressed, unable to work, says he is ruined, is semi-confused, refuses to eat when anyone else is present; will not undress. (Recently his salary was reduced by 50 per cent., and this is stated as an exciting cause.) Frequently mute, wanders off about wharves of city; has expressed wish to sit on railroad track.

Examination on admission shows man of small stature, fairly well nourished, keen searching glance, worried expression. Physical examination negative. May 18: Appetite good; sleeps well; will not answer when spoken to and repels any efforts made to engage him in conversation; occasionally, if pressed, will answer in monosyllables. May 19: To questions of examining physician anent his health says he is perfectly well; is silent when asked to explain his strange conduct at home; fundamental mood one of depression. June 2: Depressed and agitated because he states he has no funds to meet his maintenance here and asks to be allowed to leave; refused to go out to do light work in the carpenter shop. Patient's condition remained one of depression until the end of July, although occasionally he could be induced to go to the carpenter shop where, however, he took but little interest in what

*Read at the sixty-eighth annual meeting of the American Medico-Psychological Association, Atlantic City, N. J., May 28-31, 1912.

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went on and seemed incapable of doing any but the simplest work. August 1: Sent for physician and told him, in great anxiety, that he was dying from a leakage of semen into his bladder and that he was impotent; insisted on having his scrotum examined, which was normal, but when questioned about his delusion, answered irrelevantly and could not be persuaded to explain or discuss this delusion. August 2: Not eating, says he is not fit to live. August 13: Has delusion his "insides are all absorbed"; states he cannot any more discriminate between right and wrong.

During the summer of this year patient continued depressed, hypochondriacal, seldom or never speaking voluntarily. In October became very sleepless, pacing floor at night and it was reported by other patients that he at times mentioned self-destruction; at this time he seemed more than usually stuporous, showing motor as well as psychic negativism. During January, 1898, acted constantly as if in great fear, but all efforts to draw his delusions from him were unavailing; is now, however, sleeping better and general physical health is up to par.

Throughout the years 1899 to 1903, inclusive, he remained in *statu quo*; he was fairly cleanly, though objected to washing in mornings or bathing; quiet; mildly depressed; mute; avoided others; passively resisted attempts to get him outdoors, often holding a newspaper in front of him, usually upside down, probably in the hope he would not be interrupted if engaged in reading; he attended entertainments but manifested no pleasure or interest therein; dressed himself, and conformed, as a whole, to hospital routine readily.

During 1904 and 1905 he continued the same quiet, inoffensive case, except that in August he violently attacked another patient near him, without any apparent cause; this was probably a reaction to some hallucinatory state, though such could not be definitely determined; for a few days after this he seemed stuporous, restless at night and took little food. Soon again he resumed his former quiet mode of daily life. During the years 1906 to 1909, inclusive, he continued in much the same state already described as obtaining from 1899 to 1903; he was now judged to be demented and to offer little or no likelihood of improvement.

In June, 1910, he had a mild attack of coryza and bronchitis attended by a moderate rise in temperature which lasted for a few days; soon after this he seemed brighter, suddenly developed some interest in external affairs and began to speak to the physicians and attendants in a rational manner; at this time his physical condition showed improvement. He was recommended to go out daily and work with the gardener and about the middle of July readily assented. A fortnight later his wife and daughter were sent for owing to the evident improvement in his mental condition, but he objected to seeing them; he gave as his reason, that "he had no desire to renew old acquaintances," he also showed some restlessness after their departure.

From this time on his improvement steadily became more pronounced, his depression disappeared, he took a lively interest in all affairs going on

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about him, read periodicals and newspapers eagerly and gained in weight. He was soon permitted to go alone to visit his friends in Montreal for the day, and on October 18, just thirteen years and five months from the date of his admission, he was allowed to go on parole to his relatives. Shortly after this, occupation as book-keeper was procured for him with the same corporation that had formerly employed him; there he remained, doing his work satisfactorily until early in November, 1911, almost a year after his discharge from hospital, when he died suddenly on the way home from his work one evening, cardiac syncope being the cause. No hint of any depression or return of the mental symptoms was noticeable during his sojourn at home. At the time of his discharge he was sixty years of age.

Case II.—I. N., female, æt. 51, admitted to Verdun Hospital November 9, 1903. Married 16 years, has four children. Nativity, Germany, Jewish. Parents dead. Merchant's wife; fair education. Heredity, both direct and collateral, denied. This is first attack and began six months before admission to hospital; patient always considered as normal; as a girl, and even to maturity, however, would allow her sisters to impose upon her by allotting work to her which rightly she could have refused, but which, while secretly objecting to, she did without open demur. Attack first showed itself by depression, delusions that her family no longer wanted her or cared for her; suicidal propensities manifested early, one attempt at self-destruction being made by choking herself with a handkerchief. (Her husband's failure to support her and his ultimate desertion of her and their children is quoted as the exciting cause of the mental disease.)

Examination on admission shows woman of medium height, spare but fairly strong and active. Face is indicative of depression but this is not extreme in degree; talks quietly about herself, betraying no evidence of delusions at interview; speaks of her husband's desertion four years previously but does so in an unemotional manner. Memory for recent and long past events good. Physical examination negative. November 10: Slept well; quiet, agreeable and pleasant when approached; asking for work to do, willingly went walking, attended entertainment. November 11: Sleeping well, taking nourishment well. November 15: Nothing noteworthy save simple depression; not taking food as well to-day. November 16: Wakeful at 3.40 a. m., saying she could not sleep; during day was restless and irritable, often crying. Slept a little during day. November 18: Restless during night, delusional, imagined charges were being laid against her. November 20: Insomnia marked, says she is the cause of other patients being noisy; asking to be taken to prison; not eating. November 23: Has grown more agitated and depressed, and to-day required artificial feeding. November 25: Shows negativism, has to be forced into dining-room, and resists taking meals. In December the depression deepened and she showed marked motor agitation, frequently pacing ward, crying out, "Oh what made me do it"; sleeping very poorly. When visited by relatives ignores them completely.

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During January, 1904, continued in a state of depression and fear, frequently restless and repeating, "I never did it," or "Nothing can be done." Now refuses to go to bed, or, if she does do so, soon gets up and stands behind the door; failing in weight. During February showed no improvement, her mental agony now expressed by moaning and muttering to herself; motor negativism apparent. In March patient remained in much the same condition except she became mute as far as hospital staff were concerned and also failed to respond to any questions put to her by her brother when he visited her. For the remaining months of the year 1904 few or no new symptoms developed; patient remained depressed, mute; at all times showed a moderate grade of negativism and while sleeping fairly, frequently was induced to take nourishment only with great difficulty; she continued cleanly in habits.

Early in 1905 was visited by her son but would not speak to him or give any sign that she recognized him or was pleased with his visit; about June of this year, however, the negativism lessened somewhat and although she would not speak she began to help with work in the dining-room of her ward; during a visit from her son in July she became excited in manner and restless but would not answer him when spoken to; this slight change for the better, as indicated by her voluntarily assuming certain duties in the dining-room, lasted until mid-summer of 1906, when she relapsed into her former condition of semi-stupor and abandoned any attempt to do simple work.

From this time onward for over five years, that is until the end of 1911, patient remained quiet and depressed, the degree of passive resistance varying from time to time although always present. She remained absolutely silent, but evidently understood what was said to her, as shown by her following certain simple directions during her less stuporous periods; her general physical health remained up to the average in spite of her inactive habits, her appetite was good and she slept well; no sign of uncleanliness in personal habits was evidenced throughout this long period.

In February, 1912, she developed an attack of subacute articular rheumatism, attended by some pain and swelling first of wrist, then ankles, and it was noticed during the daily examinations made that she seemed much interested in any directions given for her treatment, her glance grew more intelligent, when asked to move in bed she would do so readily, and in other respects would follow out what was recommended to her as being likely to be of benefit; after a few days when asked a question she would nod or shake her head to give affirmation or denial. She became convalescent from the rheumatic attack by the last week in March, and maintained the improvement noticeable in her mentality, soon began writing notes to express her wishes, and letters to her relatives, all well written and clearly expressed. By April 11, as nothing irrational in her behavior or letters was noticed, her relatives were recommended to take her home, in the hope that the change might be of assistance in overcoming her now peculiar silence; to all questions as to why she did not speak she would simply write, "I cannot do so."

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Patient after reaching home continued silent for several days, indicating her desires and requirements quite intelligently by writing; she carried a pad and pencil about with her for the purpose. Her conduct, except in the matter of speaking, was rational in every respect, personal cleanliness being scrupulously observed; she showed a quite normal interest and affection for her brother and his family with whom she was domiciled. One of the leading laryngologists was consulted, but the most careful examination showed nothing wrong with the organs of speech.

Speech was reestablished suddenly during a paroxysmal attack of coughing brought on during the night, owing to the passage of mucous from the back of the nares into the throat; her first words were, "I can't, I can't," to her brother who, hearing her coughing severely, came to her room; she was sitting up in bed, and evidently spoke in the effort to procure aid for the suffocating sensation which assailed her. There is little doubt that the abrupt and insistent influence of fear was the force which overcame this strange mutism, which had now lasted for slightly more than eight years. During the morning following her fit of coughing, which simple measures wholly relieved, she voluntarily but hesitatingly spoke her brother's name, then, on request, the names of other members of the family. This, at first, was done in halting fashion, but distinctly. Guided and urged, she then said phrases simple in character, but with some hesitation. As the efforts to induce her to speak were persisted in throughout the day, she gradually responded more willingly, and articulated more distinctly, hourly showing a return of confidence in herself and in her ability to answer and talk. The day following she talked more or less constantly, but rationally, mostly referring to events that had occurred before her illness. Since that time she has been normal in every respect. She remembers much that took place while in hospital, except for the first three months after admission, and for the month immediately preceding her admission to hospital; these periods remain practically a blank. The patient's age on discharge was 59.

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DR. ELI TODD AND THE HARTFORD RETREAT.

By CHARLES WHITNEY PAGE.

In the year 1715 the General Assembly of the State of Connecticut revised the public statutes, one act of which reads as follows:

> When and so often as it shall happen to any person to be naturally wanting of understanding, so as to be incapable to provide for him, or her, self; or by the Providence of God, shall fall into distraction and become *non compos mentis,* and no relative appear that will undertake the care of providing for them, or that stands in so near a degree as that by law they may be compelled thereto; in such cases the selectmen or overseers of the poor of the town, or peculiar where such person was born, or is by law an inhabitant, be and hereby are empowered and required to take effectual care, and make necessary provision for their relief, support and safety of such impotent or distracted person, etc., etc.

For the next century, in the State of Connecticut, no more direct or specific laws regarding the insane were enacted. Meantime any surroundings, however unfitted, cramped and forbidding; any devices, however galling and cruel, deemed by ignorant or inexperienced relatives as proper measures for confining or restraining the insane, were adopted, without exciting public protests or more than passing interest, with those exceptional instances where attending physicians had had their sympathies engaged by observing the unnecessary hardships frequently imposed upon neglected or abused cases.

In 1812 Dr. Nathan Dwight, of Colchester, wrote a paper reciting existing conditions and suggesting the need of a public hospital for the insane.

His paper was read at the State Medical Convention and as a result a committee, with Dr. M. F. Coggswell as chairman, was appointed to obtain further information and report to the next annual Convention.

In 1813 this committee, having made little progress, was authorized to continue its investigations. Probably it then accomplished nothing as in 1814 the State Medical Society appointed Drs. Coggswell and Strong a committee to ascertain the number of insane in the state.

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They requested the Association of Congregational Clergymen, which Society had members residing in every town, to supply the facts. It was supposed that every community in the state could thus be canvassed by a local agent, familiar with actual conditions. Yet the report which came through the clergymen was obviously incorrect and the subject received no further consideration by the Society until after the lapse of several years.

But Connecticut physicians were too deeply concerned in the unfortunate insane to abandon efforts in their behalf.

At the spring meeting of the Hartford County Medical Society, in 1821, the subject was again introduced, and this time by men who had carefully studied it and who were ready to suggest practical methods by which to solve the various problems involved.

Action resulted and the fellows were instructed to bring this matter of the insane before the State Convention at its next meeting in May. This was done, and as a result the State Medical Society appointed Drs. Eli Todd, Thomas Miner and Samuel B. Woodward a committee to formulate a working proposition for the Society.

Todd, then living in Hartford, was evidently the original promoter of this movement in the County Society. He was ably supported, however, by Dr. Woodward, who resided in Wethersfield.

It appears that Todd had become thoroughly informed as to the usual, and the exceptional, methods then in vogue for treating the insane; and having convinced himself that very recent improvements in an English asylum marked a great advance, he resolved that the State of Connecticut should be provided at once with a central asylum, where the more rational methods of care could be employed to improve the condition of the insane.

These two men, general practitioners of medicine, were remarkable for their intellectual poise, their practical sense and their executive ability. Both were destined to work out, here in New England, practical reforms in managing the insane. By their personal service in the cause, and their published reports, they virtually molded and directed for many years, in this section of the country, professional opinions regarding the custody and proper treatment of the insane.

Moreover, the methods of hospital management which these two Connecticut men subsequently inaugurated, Dr. Todd at the Hart-

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ford Retreat, and Dr. Woodward at the Worcester State Hospital, accorded with institutional standards which are and will ever remain, pre-eminent, in respect of humane consideration and the skillful employment of moral agencies. When therefore the medical convention deferred to the judgment of these men, its action was well considered. The committee quickly reported that "immediate work to secure an asylum for the insane ought to be instituted. Whereupon, the State Society added Drs. William Tully and George Sumner to this committee, and instructed its members to proceed in the undertaking and formulate 'a constitution for the regulation of the government' of such an asylum."

The importance and urgency of this humane departure in the care of Connecticut insane so strongly appealed to those kind-hearted and clear-headed doctors, that the committee was requested to report at an adjourned session to be held for that purpose on the 3d day of the ensuing October. On the day appointed, the convention re-assembled and listened to the report of the committee. This report was such a masterly presentation of the cause, showing such complete insight as regarded actual conditions which confronted them, and such comprehensive knowledge of what had been attempted elsewhere, and what could be done in the way of bettering the conditions of the insane, that copious extracts from it are necessary to do simple justice to the author—Dr. Todd, in all probability. It states:

> It appears that in 70 towns there are somewhat more than 500 cases of insanity. Fifty-four towns remain to be heard from; and should the disorder be found equally prevalent in them, the entire number in the State will scarcely fall short of 1000.
>
> Their situation is wretched in the extreme. The victims of moody melancholy constitute a class of beings enslaved by the phantoms of their own imagination—phantoms which hover around their dwelling and pursue them in their customary rambles. As they enter a home endeared to them by many a fond recollection, the anxious countenances of a family once lightened by the rays of cheerfulness and hope, serve to depress hearts already overloaded with sorrow.
>
> In their whole intercourse with society, their spirits are wounded by a sneer or a jest. . . . . The force of their disease is augmented from day to day, and at last suicide or confirmed insanity is the result of accumulated, though imaginary insanity. . . . . But the poor maniac doomed to confinement in the lonely dungeon, and often to wear chains which should be reserved for guilt alone, claims our intercession and sympathy. In

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most cases he retains mind enough to see that he is an outcast from society, or associated with its most infamous members. Thus situated, and retaining a consciousness of his own innocence, he feels he is injured and abused. . . . .

The wretchedness of those families upon which devolves the care and maintenance of the insane can be estimated only by those who from personal observation have become acquainted with its extent. We infer that while the causes which have been enumerated continue to operate, mental alienation will continue to prevail, and in private practice no disorder is more unmanageable.

The patient suffers from want of that steady course of discipline which is equally removed from cruelty and indulgence. . . . . It often happens that the character and "rank" of the patient prohibit the use of those salutary measures, which in a public institution might be pursued.

Is he the master of a family? The recollection of his former ascendancy, and the idea of his personal rights, will cling to him until he is removed from the dwelling over which he claims control. Is he a child? Accustomed to indulgence, he brooks no restraint, but reproaches for their cruelty all who oppose his ungoverned passion. A madman in his own house is, of all situations, the worst. . . . .

Painful, indeed, would have been the duty assigned us, if, after investigating the extent of this evil, we had seen no prospect of its diminution. But when we turn our attention towards an asylum established on humane principles, and presenting to the unfortunate sufferers who enter its portals, all that ingenuity can suggest or benevolence bestow for the cure of their disorder; that cheering prospect is ours.

Such an asylum should be the reverse of everything which usually enters into our conception of a mad-house. It should not be a jail in which, for individual and public security, unfortunate maniacs are confined; neither should it be a hospital merely, where they may have the benefit of medical treatment,—for without moral management, the most judicious course of medication is rarely successful. . . . .

At the present time, it is not to be expected that we should do more than barely sketch the outlines of a place which may hereafter be modified by circumstances and matured by reflection.

If the unanimous opinion of the committee receives the sanction of the convention, the first step will be to make the public acquainted with the value and need of the contemplated asylum. And when that is once effected, we doubt not but it will find an advocate and a patron in every friend of the public welfare. . . . . Much will depend upon the judicious choice of medical and domestic attendants. . . . .

Our aim will be to guard against abuses, ... and we shall call upon those to whom the insane are to be entrusted, to act with deliberation and prudence. The friends of the unhappy patients must be assured that no efforts will be wanting to correct the delusions and arouse the dormant energies of the mind diseased. They must be assured that the inmates of

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this asylum will in all cases be treated with humanity, subject to no unnecessary rigors of discipline, and controlled by no force unless their personal safety requires it. The chains and the scourge, which have too often been the implements of coercion, must be abolished, and every attendant dismissed from the institution who resorts to violence in the performance of his ordinary duties.

The history and ceremony of the Retreat established by the Society of Friends in the neighborhood of York, England, may be consulted with pleasure and profit. It furnishes a lucid view of the effect of moral management, and teaches how much may be effected by the perseverance and the charity of the few. For many years that asylum excited little attention, and received as little patronage; but it now has assumed its pre-eminent rank, to which, from its superior regulation, it is justly entitled. Its managers appear, however, to have placed too little reliance upon the efficacy of medicine in the treatment of insanity.

In ancient Egypt, the insane were conducted to those temples in which were collected whatever seemed calculated to please the eye and rivet the attention. There, as they wandered from one magnificent object to another, the world and its vexations were forgotten, and amid the deep interests of the scene, the gloomy images which haunted them were banished from the mind.

In Greece, on the other hand, the followers of Hippocrates relied exclusively on the specific power of hellebore and its adjuvants, medicines which at this day are rarely employed.

Among the improvements of modern science must be ranked the cooperation of these two modes of practice. . . . . In the contemplated asylum, many whose cases are now deemed hopeless would regain their reason. Many a wandering maniac might have been restored to health, if, at the commencement of his disorder, he had been placed in such an institution. On this subject, however, we wish no one to rely on the bare assertion of the committee, and appeal to statements, the truth of which cannot be doubted, to prove the justness of these observations. Dr. Willis, in his evidence before the Parliament of England, stated that nine out of ten cases recovered if placed under his care within three months of the attack. In the great French hospital over which Pinel so ably presided, the records present the same flattering results. And in the extensive practice of Dr. Burrows, the proportion of cures has been still greater. What has been the experience of physicians in this State, we leave for others to decide; but excepting cases of delirium which occur in febrile and other disorders, it is feared that a large proportion of the insane never regain their reason. . . . .

As Christians, and as men, it is our duty to alleviate the sufferings of others, as physicians it is also our imperative duty to use every exertion for the improvement of insanity. No one conversant with the records of our profession can hesitate for a moment to believe that its interests would be greatly promoted by adopting the plan we have suggested. . . . .

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With this view of the subject we conclude, believing that the convention will take immediate measures for the formation of a Society for the Relief of the Insane.

It was reported that Dr. Todd's graphic description of the suffering and neglected insane and his confident prediction of radical improvements in their lot, with a brilliant record of recoveries, if only the members of the State Medical Society would earnestly work together for such ends, deeply moved his auditors, many of whom actually shed tears.

How well considered, and how very advanced, were these theories pertaining to the care and treatment of the insane, can be fully appreciated only as they are contrasted with the general ignorance and apathy on this subject, which at that time almost universally prevailed. There was a degree of public indifference, at least, concerning the mentally afflicted which entailed common neglect and almost as common abuse of the innocent victims of this deprecated disease.

What the insane suffered in former times is too widely understood to require a re-statement of the too abundant facts on record.

That the Connecticut physicians derived their inspiration and warrant from European sources, is evident from passages in their brief which has been quoted. But the bright picture they painted must have come from isolated examples.

The only act of the English Parliament before 1808 which bore upon the care and protection of the lunatic poor, was the law of 1744; and that authorized "any two justices to apprehend those who are so distracted in their senses that they may be too dangerous to be permitted to go at large and have them securely locked up and chained."

In 1806 Parliament appointed a committee instructed to "inquire into the state of pauper lunatics," but no legislation followed.

In 1807 Sir George Paul stated:

Of all the lunatics in the kingdom, not one-half are under any kind of protection from ill treatment, or placed in a situation to be relieved of their malady.

But shocking revelations in regard to asylum abuses, which became public about 1815, so disturbed public sentiment that in 1816 Parliament did enact a law "For the better care of the pauper insane." This act, however, delegated insufficient power and

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authority to the commissioners to effect any radical elimination of existing abuses.

It was not until 1844, twenty years after the Hartford Retreat was founded, that England gave to its Lunacy Commission the authority and support necessary to correct faults and abolish abuses in the treatment of all classes of the insane. Meantime private mad-houses, scattered throughout the land, had no doubt been guilty of the greatest injustice toward the insane.

Complaints against such proprietary establishments reached Parliament from time to time, and in 1773 a bill "For the regulation of private mad-houses" was submitted, but did not become the law. In 1774 a bill directing the authorities to issue a license for a private mad-house "to all persons desiring it," was passed. The English government had been slow in providing special institutions for the insane, consequently many money-making private hospitals flourished. The reputations of such places become such that there arose a strong public sentiment favoring the establishment of larger semi-public, incorporated asylums for the accommodation of the insane. An institution of this class, named the York County Asylum was founded upon a charitable basis in 1776 in the city of York. Its reputation was equal to that enjoyed by the best of its class, when in 1791 "the friends of a patient who was confined there were refused admission under circumstances which aroused suspicions, and with only too much reason as events proved." This sad instance of "man's inhumanity to man" became a landmark in the history of insanity. The unfortunate victim was a member of the Society of Friends; and the indignity and cruelty inflicted on that patient so wrought upon the sympathy of the Quaker leaders, that they determined to provide for their own insane an asylum, the affairs of which they could wholly control—a fitting place of detention where the Quaker theory of life and duty—the spirit of the Golden Rule, interpreted by the Quaker intelligence and faithfulness—could accomplish its perfect work in caring for the insane. This was a most important starting-point for modern methods of humane treatment of the insane, especially in English-speaking countries.

It is true that Pinel, in France was at that time treating the insane along similar lines, and in the following year, 1792, he characterized the new era for the insane by a wholesale removal

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of chains from supposedly dangerous maniacs in a Paris hospital. But the political troubles of that country, at that period, so obscured individual efforts for the uplift of humanity, that Pinel's work was not generally understood and appreciated until considerable time had elapsed. The York Quakers did not learn the facts concerning Pinel's masterly stroke until 1806, therefore their conception of a home for the insane was wholly without precedent so far as they had knowledge upon the subject.

The acknowledged leader of this movement, to establish the York Retreat, was William Tuke, who represented a family which for several generations had conducted in York a wholesale tea and coffee business. He, with several others, began collecting funds for an asylum in 1792; but the building with accommodations for sixty patients was not completed until 1796.

The Quakers were unwilling to call their philanthropic project an asylum, because that word had become associated in their minds with too much that was painful and forbidding. For a time they were much concerned over this matter, when finally Tuke's daughter-in-law, Mrs. Henry Tuke, suggested the very appropriate name "Retreat," which they readily adopted, deeming this happy solution of their perplexity an augury of future success.

In this hospital of original ideas—the York Retreat—not only were the long-time hardships and abuses, which the insane had hitherto received, eliminated, but medical treatment was in its early days almost ignored. A retired physician, Tuke's brother-in-law, assisted him for two months when patients were first admitted. But after his death Tuke was in absolute charge for a year or more, until he secured the services of another layman, Mr. Jepson, who became an excellent manager in time under Tuke's oversight. It is probable that York physicians were brought in to treat patients who developed symptoms of acute, obstinate disease, but no resident physician or medical superintendent was officially connected with the York Retreat in its early history.

The consequences of this unusual hospital arrangement were momentous. At a stroke, quietly and innocently dictated, traditional modes for caring for the insane—the routine, undesirable hospital practices, and pernicious personal experience with the old order, were simply blotted out. Had a recognized physician

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been employed to manage the York Retreat, the authority of the schools and the fancied dignity of the profession would have dwarfed, in his mind, the utility of those simple, practical, humane measures, clever devices and social arts which were depended upon to control and regulate the lives of his insane wards.

The open-minded, non-professional, Tuke administered mild domestic remedies and the warm bath. He learned that tonics and a liberal diet promoted cheerful spirits as they improved the bodily health. He antidoted inclinations to turbulent conduct by providing regular employment for his patients and mitigated insomnia by giving them hearty meat suppers with a liberal supply of porter. He planned agreeable occupations—something to engage the mind while exercising the body: such as gardening, household duties, riding, walking, sewing, embroidery, reading, singing, games, instrumental music, etc., all to be performed with order and regularity, even to dining-room habits, retiring at night and rising in the morning, thus enforcing a mild but salutary discipline. "He acted upon the theory that self-esteem on the part of the patient was more potent than threats and appeals to fear." To successfully control patients through such inducements, every incident of the day required constant attention, with unwavering kindness on the part of the attendant or nurse, and a judicious oversight on the part of the management.

Thus Tuke evolved his system of treatment—a mode of caring for the insane which wonderfully ameliorated the worst features of the disease, and convinced unprejudiced observers that even the cure of insanity in many cases depended more upon humane, than medical, agencies. In the process of time this dependence upon moral influences in the care of the insane came to be discussed and referred to as "the moral treatment of the insane."

Once started on its noble career, the York Retreat went quietly about its humane work attracting but little local attention. Meantime it was visited by a number of discerning foreigners, who were deeply impressed by the absence of ordinary asylum features, the unexpected quiet and the family atmosphere, which pervaded the institution. As a result, several laudatory articles appeared in foreign publications. Dr. Ferrus, physician to Napoleon I, wrote that it was "the first asylum in England which arrested the attention of foreigners." He extolled "the home-like arrange-

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ments" and the "moral treatment" which Tuke had conceived and was testing out; "the abolition of unnecessary restraint; the absence of irksome discipline; the quiet and orderly disposition of the place, and the evident value of industrial employment."

Dr. Delarine, a Swiss physician, commented enthusiastically concerning the institution after a visit of inspection. He compared it to "an ordinary farm colony"; and expressed surprise that "the house had no window bars or gratings." It was through this Swiss doctor that Pinel, in 1797, first heard of Tuke's enterprise in York.

After the York Retreat had been in successful operation for a dozen or more years, Samuel Tuke, a son of William, published several articles claiming that "the institution had demonstrated the beneficial results of humane ideas consistently applied to the treatment of insanity." In 1813 he published in book form a "Description of the York Retreat," which served to spread its reputation and fame. This book, with its novel claims, naturally attracted marked attention. It provoked discussion and aroused serious-minded hospital managers. Thus by direct and indirect means it accomplished great good, marking the beginning of better treatment of the insane in civilized nations.

A lengthy notice, of this book, written by Sydney Smith, was published in the *Edinburgh Review,* in April, 1814. The writer observed that "the Society of Friends seemed to consult the interests of the patients rather than those of the keepers"; that "the superintendent preferred to run some risk rather than use restraint"; that "he placed little dependence upon medicine alone for the cure of insanity," but "very frequently employed the warm bath with the happiest results"; and concluded that "upon the whole, we have little doubt that this is the best managed asylum for the insane that has ever been established and part of the explanation no doubt is, that the Quakers take more pains than other people, with their insane."

But this "Description of York Retreat" received few such appreciative notices, and it met with some hostility and detraction.

Willful and malicious misrepresentations of the Retreat and its internal affairs were freely circulated. The head physician of the neighboring York County Asylum anonymously published, in a local paper, most bitter and unfounded attacks.

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Eventually these libelous publications so aroused the non-combatting Quakers, that William Tuke decided to expose conditions in the county asylum, the abode of his most annoying enemies. Conforming to the plan of foundation, a number of Quakers became members of the governing board through liberal subscriptions. They soon made a searching investigation, and the revelations, shocking beyond the expectation of Tuke and his friends, checked open calumny of the Retreat, and awakened a widespread public interest on this subject.

But unfortunately for the insane, there persisted, in official circles especially, much opposition to Retreat methods, due to tradition, erroneous ideas of expediency, and official indifference. On the whole, however, an enlightened public opinion gradually brought about many favorable modifications in asylum practice, though it was many years before the insane in confinement were emancipated from unnecessary restrictions and grievous cruelties.

At the time when Dr. Todd, in Connecticut, was giving such glowing accounts of the Quaker system of moral management, English physicians as a rule were either skeptical or neutral regarding its advantage or feasibility. No asylum in England had openly adopted Tuke's views, and excepting the practice of Pinel in Paris, the York Retreat was the only known public institution for the insane where such radical but mild methods of treatment were systematically enforced.

There can be little question as to the source from which Dr. Todd and his medical associates derived their ideas upon the subject of hospital treatment for the insane, since they adopted the very name "Retreat," and copied, even to details, the organization in York. The formation of a society of contributors, and ranking them in accordance with the sum each subscribed, was the English plan embodied and transplanted. There is no record that any of those Connecticut physicians had visited York. But without doubt they had studied and mastered Samuel Tuke's "Description of the York Retreat," one edition of which was published in Philadelphia in 1814.

To have passed over the many prominent asylums for insane, which then existed in America and England, and to have accepted as their pattern the exceptional York Retreat, conspicuous for its

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humane Christian treatment of the insane; to have informed themselves so wisely and thoroughly; and to have become so enthusiastic regarding the Quaker theories, so far in advance of those times, evinced their discriminating judgment and philanthropic zeal.

Thus equipped for the important task before them, Todd and his co-workers strove diligently to secure a Connecticut Retreat; and with a degree of assurance that overcame opposition, and a spirit of enthusiasm that actuated a wide circle of interested citizens.

The subscription committee of the Connecticut Medical Society met at New Haven in May, 1822, and found that $12,000 had been pledged. To this sum the State Medical Convention soon after added $600, all the available funds then in its treasury.

During the same month a memorial was addressed to the General Assembly, then in session, praying for a charter, which would legalize their organization, and confer power to purchase the necessary land, build and maintain an asylum for the treatment and custody of insane patients.

Having previously considered, at some length, the committee report presented by Dr. Todd to the State Medical Society, and its stirring effects upon that usually sedate body, it can be imagined with what command of relevent facts, with what logic and pathos Todd, and his aides in that human enterprise, appealed to the committee of the legislature.

When Todd was impelled by a sense of justice he could phrase brilliant and persuasive figures of speech.

Referring to Todd's rare oratorical endowments, the late Henry Barnard, LL. D., Hartford's noted educator, wrote:

> No man of my recollection, and I have in my life time been thrown with many of the foremost men of the world, so impressed me as a public speaker.

Evidently the speakers for the Connecticut Medical Society acquitted themselves with credit, for the desired charter was immediately granted.

But that instrument, important as it was, is not the only document extant to prove that those devoted physicians offered brilliant and convincing arguments; that they disclosed ample grounds of assurance for the faith which kindled and sustained their en-

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thusiasm regarding the improvements possible for the insane in the state.

The joint resolution, relative to the act of incorporation, is a state paper which merits reproduction in this historical review, since it abounds with spontaneous evidence that these earnest, well-informed doctors had fully persuaded the law-makers of the state that, at length, the most perplexing problems associated with insanity were clearly comprehended, and that the proposed solution would fulfil their expectations. In fact, the committee of the legislature was so completely captivated by the doctors and their proposition, that its members seemed to vie with the medical committee in promoting this exceptionally important measure, so replete with promise of public good.

Their unique resolution reads as follows:

The Joint Committee to whom was referred the Petition of Thomas Hubbard, and others, on the subject of the establishment of an asylum, or Retreat, for the Insane in this State, praying for an act of incorporation; respectfully report that they have inquired into the truth of the facts as stated in said Petition, and find that in May, 1821, the Connecticut Medical Convention appointed a committee to ascertain the number of insane persons within the State of Connecticut, and made report thereon to said convention in October, 1821, when it appeared that there were in this State more than 1000 persons suffering under the disease of insanity. The Medical Convention thereupon appointed committees to solicit donations for the purpose of purchasing lands and erecting buildings for the proposed asylum, for which benevolent object more than twelve thousand dollars has been subscribed. The Committee further find that the members of said Medical Convention have made almost unexampled exertions to promote the objects of said asylum, and have besides most liberally appropriated therefor, the whole of their funds, amounting to six hundred dollars.

It has also been proved to the Committee, by the statement of physicians of high respectability, the truth and the correctness of which the Committee cannot doubt, that very important and valuable discoveries and improvements have been made in Europe, particularly in England and France, in the art of curing and relieving the insane in regard to both medical and moral management, and that mildness of treatment has been most successfully substituted for chains and violent restraint, and that upon an average, 91 in 100 cases of recent insanity are treated successfully, and that out of 100 old cases, generally deemed helpless, 35 of those unfortunate persons have been restored to health; to their friends and to society. To produce such desirable results, it is indispensably necessary that a Retreat should be provided for the sufferers under this grievous and terrible calamity, where they may remain under the constant super-

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vision of professional gentlemen of skill and experience in the modern and approved mode of treatment and cure.

It is the avowed, and in the opinion of this Committee, the fixed and sincere, intention of the Petitioners, to introduce into this State the modern improvements and discoveries above referred to, and to admit into the asylum, the indigent as well as the rich, upon moderate and reasonable terms.

For which laudable intention, and for the persevering efforts already made by them to carry it into effect, the members of said (Medical) Commission are richly entitled to the thanks and gratitude of their fellow-citizens.

Notwithstanding the enterprise and the extraordinary zeal and liberality of the projectors and patrons of this humane institution to promote its interests, it is feared by the Committee that without the aid and patronage of the General Assembly it may droop or totally fail of success. But the Committee have good reason to believe that with such aid and patronage it would soon become an institution of great public utility, honorable to the character of the State, and to the cause of humanity.

Strongly impressed with these considerations, the Committee recommend a special grant on said Petition, viz.: That the petitioners and such others as they may associate with them, be made and constituted a body politic by the name of The President and Directors of the Retreat for the Insane; that $5,000 be granted to said institution from the public funds, payable whenever, if within two years, $15,000, exclusive of this grant, shall have been subscribed, and $10,000 thereof actually paid to the treasurer of said corporation for the benefit thereof, and that the Governor be authorized to grant a brief for five years, one a year, soliciting contributions for the benefit of said institution.

(Signed.) AUSTIN OLCOTT.

The charter granted embraced the recommendations of the committee and the general specifications included in the petition. The plan of organization was copied from English precedents. Some of the details were as follows:

This Society shall be comprised of those subscribers whose benefactions shall amount to either of the subsequent sums: Those who pay $20 shall be members for life. Those who pay $12 shall be members for 10 years. Those who pay $2 shall be members of the Society, and shall be required to pay the same annually until their names are withdrawn from the subscriber's list on application to the Secretary. $200 paid by the Connecticut Medical Society shall constitute the President and Fellows, *ex-officio*, members of the Society.

Those subscribers who pay $100 or an equivalent annuity, or $25 annually for five years, shall be Directors for life. Those who pay $200 shall be Vice-Presidents for life. Any subscriber paying $200 may at all times name one indigent patient who is to be received into the asylum

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upon the most favorable terms. Any town, corporate body, or association of individuals, paying $250 may have the same privilege.

Section IV provided for the appointment of a superintendent as follows:

There shall be a physician for the Retreat, who shall be nominated by a committee of five members appointed by the Medical Convention, and their nomination shall be transmitted to the Board of Directors for their approbation, if a Board of Directors shall be established by the by-laws of the corporation, otherwise to the Society for their approbation. If the person thus nominated shall not be approved, said committee shall nominate another person without delay. If the nomination shall be approved, the election shall be declared valid, and the person thus elected may hold his office until removed by a majority of the whole number of Directors. The medical and moral treatment of the patients shall be confided to him, and he is to determine the propriety of their admission and discharge.

This clause of the charter which was designed to enable the State Medical Society to control the medical management of the Retreat, was eminently logical and proper, since the institution was the substantial reward of great faith and hard work on the part of that medical fraternity. Besides, in those days well-informed medical men were the only class of citizens competent to determine the fitness of candidates for the position of superintendent.

Section III of the charter gives additional evidence that the state society regarded the practical activities of this medical establishment as being properly within its supervisory duties, as it provides for constant and continuous independent medical inspection in the following terms:

There shall be six visitors, physicians, two at least shall visit the Retreat every month. . . . . They shall inquire into the medical and moral concerns of the institution, suggest improvements and designate abuses.

Two years later, at the May session of the General Assembly in 1824, this charter was amended by the omission of many details in the original, regarding subscribers, who should constitute the society, and other matters concerning the organization, management, etc., which could be regulated to better purpose and with greater facility in accordance with a constitution and by-laws devised by the managing officials, and changeable when working experience discovered a necessity therefor. This 1824 charter remained unaltered for 81 years.

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The original charter having been obtained, the subscribers to the Retreat fund met in Middletown, October 28, 1822, to organize as a society. Dr. Woodward was appointed clerk. It was found that $20,000 exclusive of the state grant had been pledged. There were more than 2000 subscribers. Thirteen had given $200 each and were therefore vice-presidents. Nineteen had given $100 each and were directors for life.

December 3, 1822, an adjourned meeting was held in Hartford to perfect business arrangements. It was voted to locate the asylum in Hartford. Accordingly a site in the southern part of the city was purchased, and early thereafter building operations were commenced.

January 7, 1823, the managing officials met and elected Dr. Eli Todd, physician to the retreat. "He first brought the attention of physicians to the need of a Retreat for the Insane, and when the object of his long contemplation and ardent desires was an accomplished fact, as if by general consent he was selected as physician and superintendent to carry into effect the benevolent plan of its founders." At first Todd demurred. He feared his acceptance of that office would lead the public to construe his strenuous efforts to establish the Retreat as personal and selfish. But he ultimately yielded to the unanimous solicitations of all interested parties.

Eli Todd was born in New Haven, 1770, and graduated from Yale College 1787. In 1790, when 20 years old, he commenced the practice of medicine in Farmington, where he remained 29 years, acquiring gradually a large practice and high repute as a skillful physician.

In 1808 a serious epidemic of "spotted fever" broke out, and persisted for fifteen months. 700 cases were seriously sick, and many died. The people became frightened and exhausted. No outside help could be secured, and panic prevailed; the streets being deserted for months. Dr. Todd's skill and character were among the town's best assets in those days. Governor Treadwell's account of the epidemic contains this statement, viz: "The attending physicians, Drs. Eli Todd and Solomon Everest, are worthy of much honor for their humane, painstaking and skillful services during the whole scene of distress." In 1819 Dr. Todd removed to Hartford, where he continued private practice until elected physician to the Retreat.

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He was a man of rare mental endowments. "His judgment was profound, clear and discriminating; his apprehension remarkably quick; his memory strongly retentive, his imagination and fancy brilliant and ever awake. His tastes were delicate and refined, the source of much enjoyment to himself and much pleasure to others. His conversational powers were uncommon. Though usually affable, and often inclined to sprightfulness and gayety in his intercourse with others, yet his mind was naturally of a highly philosophical and speculative turn.

"On occasions when the subject required or admitted of it, he would give utterance to his sentiments and feelings in a style vivid, bold and figurative; abounding in striking imagery, interesting and picturesque descriptions or narratives, and lively sallies of wit and humor. No one on such occasions could be long in his presence without being sensible of, or paying homage to, the vigor of his understanding and the brilliancy of his imagination. But while his rare intellectual powers inspired sentiments of respect and admiration, his moral and social qualities, the attributes of his heart, secured to him the strongest attachments." "He possessed a mountain of benevolence," was the verdict of Spurzheim, the famous phrenologist, after making a personal examination of Dr. Todd. "Many who were his patients can testify to his kind-hearted sympathy in the sick-room, to the unwearied assiduity with which he watched at the bedside of the sick, to his anxious solicitude to devise and adopt every possible measure for their relief, and to the affectionate language and manner with which he aimed to allay their sense of distress when it could not be at once removed.

"In his intercourse with society, his manners and general deportment were usually courteous and gentle; he was ever frank, open-hearted and sincere; exhibited a high sense of honor, always despising what was mean and disingenuous, and ever attentive to all the decorums of time, place and character. Although he aimed, and with almost uniform success, to avoid giving offense, yet he was fearless and independent in expressing his sentiments and pursuing the line of conduct he chose to follow."

The Connecticut Retreat for the Insane was opened for the reception of patients in January, 1824. The public had come to expect grand results from its treatment of the insane. There

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prevailed a wide-spread general interest concerning it, and faith in its success, strong from the first, was reassured when Todd assumed official charge. Time demonstrated the fact that such faith was well grounded. That his management of the Retreat was successful and wholly satisfactory to its patrons, his medical brethren and the general public, is certified by the annual reports of its operations and the recorded opinions of various authorities. Dr. Amariah Brigham, the founder of the AMERICAN JOURNAL OF INSANITY, and who was superintendent of the Retreat from 1839 to 1842, wrote that "Dr. Todd was eminently fitted for the moral treatment of the insane, in which he practically excelled. His great merit, we conceive, is his having zealously embraced and practically introduced into this country, and made extensively known here, the moral and medical treatment recommended by Pinel, Tuke and Willis. He made the law of kindness the all-pervading power of the moral discipline of the Retreat, and required unvaried gentleness and respect to be manifest towards the inmates of the institution by every member belonging to it. He early discountenanced depletion, particularly bleeding, in insanity, insisted upon the necessity of a generous diet, and recommended a frequent resort to tonics, in the medical treatment of insanity. This course of treatment, though it had been recommended by the best writers on insanity in Europe, had not to much extent been resorted to in this country previous to the time of Todd, and it was so contrary to that recommended by Dr. Rush that it required considerable boldness and much address to introduce it, and make it popular in this country; and this Dr. Todd accomplished."

At the corner-stone laying of the Connecticut Hospital for the Insane, Dr. Earle said:

> Let it ever be remembered to the honor of Connecticut that she furnished one of the first prominent opponents to blood-letting,—this ultra-heroic, this war-like treatment. Dr. Todd, the first Superintendent of the Retreat, boldly resisted medical opinions of the day, at a time when such resistance required a strong will, founded upon a sense of duty and a moral courage worthy of all commendation.

Three or four years after Dr. Todd opened the Retreat, it was visited by Captain Basil Hall of the Royal Navy, who spent the years 1827 and 1828 in America, and subsequently published an

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account of his travels with descriptions of many interesting things which attracted his attention. He writes:

Dr. Todd, the eminent and kind physician in charge of the Retreat, gladly communicated his plans and showed us over every part of the noble establishment—a model, I venture to say, from which any country might take instructions. . . . . Dr. Todd's method is to treat every insane patient as if he were a reasonable being. . . . . When a patient is brought to the Retreat, the physician converses with him freely, and without attempting to deceive states all that is known of his case; explains that he is brought there for the purpose of being cured of a disease which happens to affect his mind as it might have done his body. . . . . That he will have every possible freedom consistent with his own safety and the comfort of his friends. The same cordial unreserved system is present from first to last.

Captain Hall incorporated in his published comments upon the Retreat, the following statements, which he copied from a report by the visiting physicians and which was probably written by Dr. Woodward:

Of the moral and medical management of the patients the committee are bound to give a brief detail, as the general plan of treatment adopted at this institution is more or less original, and different in some material respects from that pursued in any other hospital. In respect to the moral and intellectual treatment, the first business of a physician is to gain the patient's entire confidence. With this in view he is treated with the greatest kindness, however violent his conduct may be,—is allowed all the liberty his case admits of, and is made to understand, if he is still capable of reflection, that, so far from having arrived at a mad-house where he is to be confined, he has come to a pleasant and cheerful residence where all kindness and attention will be shown him, and where every means will be used for his recovery to health. In no case is deception employed or allowed; on the contrary, the greatest frankness as well as kindness form a part of the moral treatment. His case is explained to him, and he is made to understand, as far as possible, the reason why the treatment to which he is being subjected has become necessary.

By this course of intellectual management it has been found, as a matter of experience at our institution, that patients who had always been raving when confined without being told the reason, and refractory when commanded instead of entreated, soon became peaceable and docile.

This course of treatment, of course, does not apply to idiots, or those laboring under low grades of mental imbecility, but it is applicable to every other class of mental disorder.

In respect to the medical and dietetic treatment, it also varies essentially in the main from the course adopted at other hospitals.

Formerly patients laboring under a mental disease were largely medicated, chiefly by emetics, cathartics, and bleeding. At the present time,

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this mode of treatment has given place to intellectual and dietetic regimen in some European hospitals. The physician of our hospital has introduced a course of practice differing from both these, but partaking more or less of each. He combines medical and moral treatment, founded upon the principles of mental philosophy and physiology. In one class of cases moral, and in another medical, treatment become the paramount remedies; but in each class of cases both are combined. The proportion of cures which have been effected at our Retreat has satisfied your committee that the mode of treatment there adopted is highly salutary and proper.

Dr. Pliny Earle has observed that while the visiting physician's original report attracted little notice when it appeared, as a part of the annual Retreat report, when it was thus publicly "recognized and endorsed" by a prominent British naval officer, it "became worthy of recognition on this side of the Atlantic. The newspapers took it up and sent it through the length and breadth of the land, and in this way, whatever a few physicians might have learned from the report itself, the people at large received their first impression that insanity is largely curable."

In the early part of the 19th century, optimistic ideas respecting the curability of insanity prevailed. Dr. Burrows, of London, published a book in 1820, in which he claimed that "of all insane cases treated by him in hospital and private practice, the proportion of recoveries was 81 in 100—recent cases 91 in 100, and of chronic cases, 35 in 100. Dr. Willis and other specialists in mental disease claimed like success in their practice.

No doubt they stated facts, but in those days the term "insanity" was limited in its application to the more obvious departures from the normal, in mental states. Asylums had been provided to accommodate only the more pronounced cases of insanity, the violent or deeply depressed patients—those classes which will always show a high percentage of recovery. Moreover, in those days the standards which signified recovery were not sufficiently exacting to preclude errors.

Statements published in the early Retreat reports simply confirmed current theories on this subject. In the first seven years of its operation, the Hartford Retreat received 147 recent cases and discharged as recovered 132 of them, or about nine-tenths. And yet Todd was strictly honest in his returns. His sincerity cannot be doubted, since he annually published an epitome of his records, giving the consecutive number and the initials of each patient, the

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diagnosis, duration of attack, time under treatment and condition on discharge.

Those early authorities had to depend upon available statistics, and chiefly those representing their own experience, which was too limited to warrant conclusions as to the general curability of insanity; and their claims never bore that import. They always proclaimed that their recovery rates were computed upon the early treatment of acute cases.

While Tuke's genius for conciliatory tactics and captivating kindness were phenomenal, patients were occasionally subjected to mild forms of mechanical restraint in the York Retreat, and the same must be said concerning the Hartford Retreat. The logical consummation of Tuke's humane theories—"non-restraint" of the insane—was not worked out and advocated until about twenty years after the Hartford Retreat was established.

When hospitals for the insane were so small that the superintendent could spend much time with any particular patient when really necessary; and such men as Tuke and Todd presided over such hospitals—there was no necessity for strict injunctions on this score. Their tactful approach and soothing ways seldom failed to control the insane, and the infrequent employment of restraint, under such conditions, generates no vicious, far-reaching influence. But when the number of patients in individual hospitals became so large that the presiding administrator could not keep in personal touch with all the circumstances, and was obliged to delegate authority to subordinates, and trust employees to render the necessary service to refractory patients, the necessity for explicit and strict rules forbidding restraint became urgent, if the insane patients are always to receive kind treatment.

Todd plainly saw that Tuke's methods of "moral treatment" were new and rational applications of natural law to the treatment of insanity; wise and ingenious attempts to regulate by interesting employment the mental and physical ebulitions of the insane, which naturally augment, when suppression by arbitrary force is attempted.

He apprehended what the judicious, systematic application of such humane laws signify to the insane and their friends. At once the far-reaching possibilities of "moral treatment" of the insane enlisted his sense of justice, and became his working ideal.

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His subsequent life-work with the insane demonstrated that he had sensed the true essence of Quakerism. In those days, for a scientific physician, such as Dr. Todd was, to grasp at the promise of "moral treatment" to benefit the insane, to study and master its application conjointly with his superior medical skill, were rare exhibitions of altruistic nobility.

Just as other belated reforms have failed to crystalize and acquire individual potency until exploited by some single-minded enthusiast; so it required the benevolent genius of a layman, like William Tuke, to sufficiently accentuate the importance and dignity of "moral treatment" for the insane, so that it never again could be ignored.

But Todd's prompt and complete recognition of this new principle of insane hospital practice was exceptional. Eminently humane and important as was this reform, it advanced slowly in England, and forty years after Todd addressed the Medical Society and the State Legislature upon this matter, some insane persons in Connecticut were still chained.

It required a modest philanthropic spirit in an educated physician to openly patronize a layman's conception of the proper treatment of insanity.

It required the broadest sort of a scientist to admit that the supreme interests of the insane depended upon scientific diversion, sympathy and scientific mental stimulus, more than upon the scientific administration of drugs.

And furthermore, it required a philosopher to associate these dissimilar yet complementary agencies in a symmetrical and practical policy of hospital management.

Yet the peerless Todd was equal to any and all such demands upon mental and moral resources.

He unhesitating formulated his scheme of action and diligently pursued it as long as he lived.

His system was not a code of rules for subordinates to enforce, not austere, remote authority; but personal devotion and painstaking labor with his patients—that method of true leadership in a good cause which always commands respect and insures success.

While those associated with him, and those competent to judge, were enthusiastic respecting his proficiency, his attainments in

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the practice of "moral treatment" never fully satisfied his personal ambitions in that form of medical art.

After his death the Retreat managers, in estimating his worth, stated:

> To revise and improve, or perhaps it may more properly be said, to devise and establish a more perfect system (of moral treatment), was among the latest and most ardent desires of our late, much respected and lamented physician.

While Dr. Todd had decided convictions and was tenacious of his opinions, he was firm but never aggressive. In fact, he must have been a very modest man. The universal esteem in which he was held, and the many recorded tributes to his nobility of character, imply as much.

This conclusion is reinforced by the fact that he never wrote for publication except when plain duty compelled. Besides his reports to the Medical Society, the legislature and a few Retreat annuals, nothing from his pen has been preserved in book or journal.

And such regretable silence, in a man occupying a prominent, public position, engaged in pioneer work of great import to society, and possessed of conspicuous natural gifts, in respect of power of observation, and the arts of rhetoric, argues a sensitive, retiring nature.

In short, all that he did write and all that was written about him, serve to illustrate the conviction that in Todd's personality egoism was delightfully obscured by magnanimous altruism.

His profound sympathy for the insane which stamped all his views and conduct, may have had some relation to the presentiment, which no doubt haunted him, that the integrity of his own mind was not well assured, as two members of his immediate family had been insane.

He was elected President of the State Medical Society in 1827 and 1828, but declined re-election in 1829.

Towards the end of his life he became deeply interested in the subject of inebriety and its treatment. As chairman of a committee appointed to consider these questions, he made a report to the State Medical Society in 1830.

That report discusses the pitiable condition of the habitual drunkard, his sufferings, and the miseries his intemperate habits entail upon others.

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It gives an estimate of the financial burdens which intemperance imposes upon the family, the community and the state. It considers the necessity for legal restraints and penalities, but recognizes the inadequacy of fines and imprisonment for alcoholic excesses. The physical, mental, and moral conditions of the inebriate are analyzed to exhibit his broken-down standards of health, and to show that such moral weaklings ought to be subjected to an "enlightened system of physical and moral treatment" which can be properly enforced only in an institution designed especially for their custody, treatment, and reformation. The Medical Society, influenced by this report, adopted Todd's views, and

Resolved, That in the opinion of this convention, it is expedient to establish in this State, an asylum for the reformation of inebriates.

Doubtless the medical men intended to follow the methods by which the Retreat had been founded and financed. A central committee, which embraced Drs. Todd, Woodward and Sumner, was elected to advance the enterprise, and a sub-committee, for correspondence and co-operation, consisting of two members from each county society, was also appointed.

Had such an institution then materialized its operations, as projected by Dr. Todd, it would have accomplished much good and probably would have served as an object lesson to determine public opinion upon this still perplexing question.

Just how far the medical committee proceeded is not certain. But at that time Dr. Todd was a sick man. Paroxysms of angina pectoris subsequently developed and he survived this appointment only three years.

Meanwhile Dr. Woodward had left Connecticut to take charge of the Worcester State Hospital. Thereupon the inebriate asylum proposition languished in this state until Dr. George B. Hawley espoused the cause, some forty years afterwards.

Dr. Todd's hospital management was widely appreciated. An offer of the superintendency of the Bloomingdale Hospital in New York was made to him. And again a like offer to take charge of the Worcester State Hospital in Massachusetts was also urged upon him. Notwithstanding he would have received a higher salary at either of the other institutions, he remained loyally attached to the Hartford Retreat.

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From all accounts, written estimates of his character and ability, and verbal traditions which are still repeated in this community, it must be admitted that Dr. Todd was a remarkable man; possessing a charming personality, with a ready command of a richly endowed, well-balanced and brilliant mind. In cultured social circles he was conspicuous for his breadth of knowledge, his grace of speech, his wit and versatility; yet he chose to devote those rare conversational gifts, in humble service, to the benefit of the afflicted insane.

His unusual oratorical powers, which enabled him to mold the thoughts and feelings of a public audience; the skillful argument, the power of sincerity, and the command of pathos, were assiduously employed in cheering the despondent, in soothing the irritable, endeavoring to dissipate delusions, and comforting everybody within his reach.

And such was his daily occupation at the Retreat for nearly ten years—till his brilliant and useful career was terminated by death in November, 1833.

His medical friend Thomson, of Farmington, wrote of him as follows:

> In the managing of cases of insanity, perhaps no man has ever been more successful. The Retreat under his superintendence was raised to a rank second to none, perhaps superior to any other similar institution on this continent.

The medical visitors, in their final tribute, say:

> The past year has been an era that will be long remembered,—the sickness and death of him to whom under Providence, may be assigned, perhaps more than to any other individual, the high honor of originating the design of founding this institution. The united testimony of patients and friends constitute a memorial of his kindness and the success which has crowned his exertions will be an enduring monument to his skill and professional work.

His intimate and appreciative friend, Dr. Woodward, published the following summary:

> He took the Retreat in its infancy, without patients and almost without resources, at a time when public sentiment was far from being favorable to such institutions. He adopted a course of management peculiarly his own, carried it into successful operation, and gave to the Retreat a character for the comfort and care of its members, not surpassed in this or any other country.
>
> Here, too, he raised himself a name for intelligence and philanthropy as imperishable as the cause of humanity.

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Notes and Comment.

THE PRESENT STATUS OF VOLUNTARY ADMISSIONS TO INSTITUTIONS FOR THE INSANE IN THE UNITED STATES.—No section of law seems more vague and lacking in uniformity than that governing the admission of voluntary patients to institutions for the insane, as now found in the statutes of the various states.

California enacts that any suitable person may be admitted voluntarily "who is suffering from mental disease, but is competent to make a written application." He cannot be retained more than seven days except upon legal proceedings required by considerations of safety.

In Colorado, a voluntary patient may be admitted "whose mental disease is not such as to render it legal to grant a certificate of insanity." If such person desires to leave the institution he must give three days notice.

In Connecticut, a voluntary patient may be admitted "whose mental condition is not such as to render it legal to grant an order as to his insanity." Such person cannot be detained against his will more than three days.

In Illinois on the other hand, it is provided that "any person in the early stages of insanity, on his own written application accompanied by a certificate from the county court of his county, can be admitted as a voluntary patient." He cannot be detained more than three days against his will.

In Maryland, which seems to have had one of the earliest enactments on the subject, a voluntary patient "may be admitted who makes application in writing provided that the expense is borne by the person applying, or by his relatives or friends"; he cannot be detained more than three days against his will.

In Massachusetts, the provision is simply that the "superintendent may receive any person as a voluntary patient, who makes application and is mentally competent to make it." He cannot be detained against his will more than three days.

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In Michigan there is a curious provision that residents "who are afflicted mentally or with serious nervous disability, but *who are not insane* may be admitted as voluntary patients. A voluntary patient must present certificates signed by two physicians having legal qualifications "stating that the person needs asylum treatment but is not insane." No provision exists for his discharge from the institution if he desires to go away. He may, however, be discharged at any time by the medical superintendent. It is further stated that if he is found insane he must have legal proceedings instituted to effect his regular admission.

In Minnesota, the provision is that "any person believing himself to be afflicted with mental disease" upon written application signed in the presence of two witnesses not employees or officers of the institution may be received at a detention hospital. If he demands his release and is deemed unsafe to be at large, he must be examined by the state hospital commission within three days and committed or discharged.

In New Jersey "any resident of the state believing himself about to become insane and desiring to submit himself to treatment," if he is competent to make an application may be a voluntary patient. He must pay his own expenses and cannot be detained more than three days after giving notice.

In New York, it is provided that "any suitable person, who voluntarily makes written application" and is "competent to make it" may be admitted to a state hospital or licensed private institution. He cannot be detained more than ten days against his will.

In Pennsylvania, "persons who are threatened with mental disorders and voluntarily place themselves in institutions for the insane may be received for a period of one month or less by an agreement which must specify the time and be signed by them at the time of admission." At the end of one month they may renew the agreement.

In Ohio "a person in an incipient state of mental derangement may apply" and be received as a voluntary patient, but he cannot be kept more than 60 days. Five voluntary patients only can be admitted to any one (state) hospital and none can be admitted if the quota of the county is full. This seems to render the provision of very little moment.

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In Rhode Island a voluntary patient may be received "who is desirous of submitting himself to treatment and makes a written application, but whose mental condition is not such as to render it legal to grant a certificate of insanity." He cannot be detained against his will more than three days.

In Vermont, any voluntary patient may be received "who seeks treatment and makes written application" for admission, "without a certificate of two physicians." He cannot be detained more than forty-eight hours against his will.

In Wisconsin a voluntary patient who is "insane or suffering from mental disorders may upon his written application supported by certificates of at least two physicians be admitted" to a state institution. He cannot be detained more than five days against his will.

It will be noticed that the phraseology is vague and not always clear and in some states it must be clearly shown by medical certificates that the person *is not insane* and yet is a fit subject for hospital treatment. In other states the patient *must be clearly insane* and his insanity must be shown by legal certificate. In others the patient *must be insane but not in such manner as to be certifiable by physicians.* Much of the confusion undoubtedly arises from the fact that according to the decision of a number of appellate courts the confinement of an insane person is not legal unless the person is dangerously insane either to himself or to the community. In several states unquestionably the reference to the insanity not being of such character as to be legally certifiable has reference to this legal view of insanity. In some states indigent patients can be admitted in this manner; in others provision is made that the expenses of the voluntary patient shall be paid by himself or his friends.

In Michigan, the first section of the law authorizes the admission of voluntary patients provided that they are not insane and are maintained without expense to the state, but a subsequent section of the law provides that indigent patients may by action of the trustees be admitted as voluntary patients. This latter section, however, was nullified by the opinion of the attorney-general.

During the past five years a large number of states have legalized the voluntary admission of patients. It is to be hoped that within the next five years all states may have a similar provision of law.

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It is difficult to get accurate data of the extent to which voluntary patients avail themselves of this privilege. We were informed at the Atlantic City meeting in 1910 by Dr. Ferris, of the Lunacy Commission, that the number of voluntary admissions during the previous year in New York had been small.

In Maryland very few voluntary patients have been admitted to state hospitals, but in one private hospital, in Maryland, with a very active service, during the past three years, about 60 per cent of the total number of admissions have been voluntary patients. In another private hospital, of Maryland, with an equally active service scarcely any voluntary patients other than inebriates have been received.

At the pavilion for the insane of the Albany N. Y. Hospital every patient is a voluntary admission and no others are admitted.

At Butler Hospital, Providence, R. I., voluntary patients constitute fully 36 per cent of all admissions.

At the Brattleboro Retreat fifty-three voluntary patients have been admitted during the past year. In Colorado on the other hand notwithstanding a long-standing provision of law no voluntary patients are reported. It would seem the part of wisdom for all hospital officials to encourage voluntary admissions and seek to place their institutions on the same footing in the admission of patients as general hospitals.

SIR THOMAS CLOUSTON ON LARGE HOSPITALS.—Far be it from us to suggest any parallelism between the old man of Horace, about whom gather the discomforts of age, and Sir Thomas Clouston, most genial and still most active of British alienists. For where indeed could one find psychiatrist of the Nestor's long and honorable experience less testy, less inclined to praise the way of an earlier world, or one less *castigator censorque minorum?* But we beg leave, without disrespect and in affectionate esteem only, to use the two words as those of endearment and, by adding a third, to dub our venerable confrère the grand old man of British psychiatry. And with this brief introduction, the JOURNAL wishes to call to the attention of its readers a recent proof in print of this appreciation in his informing article, "The Argument for the Large State Insane Hospital," published in the issue of the *Boston Medical and Surgical Journal* for February 27,

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1913, being a reply to a paper under the same title by Dr. Walter Channing, in the same journal, of date August 1, 1912.

Upon reading Dr. Channing's article in the light of Sir Thomas Clouston's reply, one inclines to the view that the two critics are after all in substantial agreement. It was not so much a plea for the large hospital that Dr. Channing made as an attempt to find the extenuating circumstances that surround its origin and so to make way for a greater tolerance of judgment in the conflict of expediency with principle. This attitude of mind appears to be shown in his reference, seemingly with approval, to Dr. Pilgrim's paper of nearly five years ago * on "The Proper Size of Hospitals for the Insane," which was a vigorous protest against the monster growths in its author's own State, supported by eloquent statistics. Dr. Pilgrim was able to make figures do his bidding and to justify the smaller institution even on pecuniary grounds. He took the lowest net maintenance rate in one of the smaller hospitals, which was $148.40, and by comparing it with the lowest net rate in one of the larger hospitals, which was $157.54, found a difference of $9.14 per capita in favor of the smaller institution. These figures seem to support the contention of Sir Thomas that in his experience large hospitals have not always been economically the most successful.

It appears that while the average yearly cost for each patient in the whole of the County and Borough Asylums of England, large and small, is £26 13s. a year, the cost in the thirty-five asylums with over a thousand patients in each is £26 17s., so that there is no saving of money by enlarging institutions to that size. Statistics also show that the recovery rate (based on admissions) is considerably higher in the so-called "Registered Hospitals" (for private patients only) than in the County and Borough Asylums, namely, 47.5 per cent against 33 per cent, though Sir Thomas, while noting the striking fact, frankly admits the insufficiency of the ground for an absolute scientific induction. Still it is beyond question that the smaller hospital with its more numerous staff of nurses must have much to do with the higher rate of recovery.

* American Journal of Insanity, October, 1908.

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The considerations which should have weight with physicians, humanitarians and legislators are, he thinks, the happiness, cure or amelioration of the patient; the cost of the proposed arrangements; and—which is also important—their effect for good or evil on the relatives and on public opinion. As an illustration of the humane spirit which pervades the article, we may quote, referring to the third aspect of the question, this sentiment: "It is a fact to be deeply deplored that in all Christian countries there is a strong and cruel prejudice against those who suffer from mental disease and defect, a prejudice which right-thinking and well-instructed men and women should strive earnestly to combat. The kind of hospital in which they are treated manifestly affects this prejudice. The man or the institution that in any way lessens this handicap of the direst affliction of humanity does a great service to civilization and makes life more worth having to millions of afflicted men and women. The patients and their relatives are alike made happier."

We learn that in Scotland there is only one hospital which exceeds, and that very slightly, a thousand patients.

The article mentions an argument against large hospitals which is seldom heard but which nevertheless has much force, namely, "the tendency to a deteriorating and hardening effect on the minds of the patients whom they cannot study medically, and of the lay officials, through their coming in daily contact with such vast numbers of demented people." And he points out that these people, being "largely uninteresting and unlovable, suggestive of no new and stimulating ideas and a dead-weight on the intelligence and emotions," one needs all the sense of duty that one can summon, all one's medical instincts and all the feeling of human kindliness to grasp and grapple with that benumbing influence even in institutions of moderate size.

The argument for accessibility is not new (Dr. Pilgrim laid stress on it in his paper already mentioned) but it is not the less cogent. In the monster institution, especially one situated at a considerable distance from any large city, the tendency is for the relatives to neglect the patient. Indeed, to many a poor person the expense of the journey becomes prohibitive. Says Sir Thomas: "There is no critic so keen about the neglect of a patient as a mother or a maiden aunt. There is no stimulus so

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good for the nurses and officials and doctors, and so effective, as a personal appeal on the part of a near relation of a patient. Is it not one of the primary rights of a citizen, sane and insane, to have reasonable facility of visiting or being visited when suffering from disease of any kind? I think myself that this is as much a humanitarian requirement as being housed and clothed and fed and nursed and doctored."

In conclusion, Sir Thomas Clouston expresses the belief that intellectual and administrative inertia is at the bottom of most of the large additions to existing hospitals—too great a disposition to follow easy lines of least resistance, and he tells us that we should be on safer ground if, as physicians, we should follow our medical instincts instead of giving undue weight to such motives of expediency as ease of administration and the saving of money.

We welcome the caution which Sir Thomas preaches and this JOURNAL is in fullest sympathy with the kindly spirit of his teaching in accepting his final admonition, "The United States and Canada would do well to make further inquiries before they follow our example."

OPENING OF THE HENRY PHIPPS PSYCHIATRIC CLINIC.—The trustees of the Johns Hopkins Hospital and the trustees of the Johns Hopkins University, of Baltimore, have issued invitations to the opening exercises of the Psychiatric Clinic "established and erected by Henry Phipps, Esq., of New York, as a department of the Hospital and of the University to promote the study of mental diseases and its early treatment."

An extensive and interesting program has been arranged, covering portions of three days, April 16, 17 and 18, as follows:

APRIL 16, 1913, 3 P. M.

THE HENRY PHIPPS PSYCHIATRIC CLINIC.

Invocation—Rufus M. Jones, D. Litt., Minister, Society of Friends, Haverford College, Pa.

Introduction—Dr. William H. Welch.

The Clinic and the Community—Dr. Stewart Paton.

A Word of Appreciation—Henry D. Harlan, President of the Board of Trustees, The Johns Hopkins Hospital.

Specialism in General Hospitals—Sir Wm. Osler, Bart., F. R. S., etc.

INSPECTION OF THE BUILDING—TEA.

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APRIL 17, 1913, 10 A. M.

THE RECREATION ROOM OF THE HENRY PHIPPS PSYCHIATRIC CLINIC.

The Sources and Direction of Psycho-Physical Energy—Professor W. McDougall.
Autistic Thinking—Professor E. Bleuler.
Personality and Psychosis—Professor A. Hoch.
The Personal Factor in Association Reactions—Dr. F. L. Wells.

4.30 P. M.

VISIT TO THE SHEPPARD AND ENOCH PRATT HOSPITAL—TEA.

8.30 P. M.

MEETING AT OSLER HALL, MEDICAL AND CHIRURGICAL FACULTY BUILDING, 1112 CATHEDRAL STREET.

A Study of the Neuropathic Inheritance in Relation to Insanity—Dr. F. W. Mott, F. R. S.
Pellagra—Professor O. Rossi.
Psychic Derangements Associated with Ductless Gland Disorders—Professor H. Cushing.

APRIL 18, 1913, 10 A. M.

THE RECREATION ROOM OF THE HENRY PHIPPS PSYCHIATRIC CLINIC.

Primitive Mechanisms of Individual Adjustment—Dr. S. Paton.
"Demenz Probleme"—Professor Heilbronner.
The Interrelation of the Biogenetic Psychoses—Dr. E. Jones.
The Prognostic Significance of the Biogenetic Psychoses—Dr. G. H. Kirby.

1 P. M.

LUNCHEON AT THE JOHNS HOPKINS HOSPITAL.

2.30 P. M.

THE RECREATION ROOM OF THE HENRY PHIPPS PSYCHIATRIC CLINIC.

Address—Dr. Achucarro.
Anatomical Borderline Between the So-called Syphilitic and Metasyphilitic Disorders—Dr. C. B. Dunlap.
Disorders Connected with Anemia—Professor A. M. Bartlett.
Closing Address—Professor A. Meyer.

Arrangements are being considered, and we trust that they will be carried out, to publish the addresses and papers above enumerated as a special number of the JOURNAL.

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APPOINTMENT OF DR. L. VERNON BRIGGS.—Governor Foss, of Massachusetts has appointed Dr. L. Vernon Briggs, of Boston, a member of the State Board of Insanity in place of Dr. Herbert B. Howard who has been president of the board for several years and whose term has expired.

The board elects its president, and it remains to be determined who shall succeed Dr. Howard in that office.

Dr. Briggs brings to the position to which he has been appointed a large degree of enthusiasm and zeal and will, we predict, be an active member of the board. He has recently been elected president of the medical staff of the Boston Dispensary, but will, we understand, give up his general practice to devote his time to his new duties.

AN ORGANIZATION FOR THE STUDY OF EUGENICS.—The Eugenics Record Office, which was established at Cold Spring Harbor, Long Island, in October, 1910, by Mrs. E. H. Harriman, and which has ever since been active in this field, with the additional assistance of Mr. John D. Rockefeller and others, has recently entered upon a new stage of its development. A board of scientific directors has been organized, comprising Dr. Alexander Graham Bell, chairman; Dr. William H. Welch, professor of pathology, Johns Hopkins Hospital, vice-chairman; Professor Irving Fisher, Yale University, Professor Lewellys Barker, of Johns Hopkins Hospital; Professor E. E. Southard, of Harvard University and director of the Psychopathic Hospital, Boston; and Dr. C. B. Davenport, secretary of the board and resident director. The board met at Cold Spring Harbor on March 21, and organized its work. The aim of the Eugenics Record Office was defined to be as follows: First, to promote researches in eugenics that shall be of utility to the human race. This part of the program includes the study of America's most effective blood lines and the methods of securing the preponderance and relative increase of the best strains; the study of the origin of and the best methods of restricting the strains that produce the defective and delinquent classes of the community; the study of the method of inheritance of particular traits; the study of the consequences of the marriages of close kin; the study of miscegenation in the United States; the study both in this country and abroad of the

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family histories of permanent emigrants. Second, to publish the results of these researches. Third, to provide a fireproof building for the preservation of eugenical records, including genealogical works and town-histories. Fourth, to provide an administrative office and staff to carry out the work.

The fireproof building that is to form the new home of the office is being rapidly pushed to completion.

The Board of Scientific Directors of the Eugenics Record Office will meet each spring at Cold Spring Harbor to consider the projects most worthy of support during the ensuing year, which begins October 1, and it will meet again in November to receive a report of the work of the office in the preceding fiscal year. The resident director has general charge of the plant and its operations and is authorized to ask for and receive, in the name of the board, funds to carry on the work of the office. The board voted in favor of the organization of a Eugenics Research Association, of which a meeting will be called early in June.

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Book Reviews.

Experimental Studies of Mental Defectives. A Critique of the Binet-Simon Tests and a Contribution to the Psychology of Epilepsy. By J. E. WALLACE WALLIN, PH. D., Director of Psychological Clinic, School of Education, University of Pittsburgh. $1.25. (*Baltimore: Warwick & York, Inc., 1912.*)

In this, the seventh of the series of Educational Psychology Monographs, Dr. Wallin presents the results of a systematic and critical study of the Binet-Simon scale applied to over 300 epileptic residents of the state colony at Skillman, N. J. The inquiry occupied a period of 8 months during which Dr. Wallin was resident at the colony, and during which measurements of standing and sitting heights, of weight, of lung capacity, of the strength of right and left hand grip, of station or body sway, and of the speed of performing the form board test were also made. It is needless to say that these inquiries were carefully carried out. In using the Binet-Simon scale Dr. Wallin used a *wide range* method, that is, he tested the majority throughout the greater part of the scale, undoubtedly a more reliable method than by using tests near to the ages where the patients graded. This was done to test the reliability of the scale as well as to reveal the peculiar mental lapses which might characterize the mental deterioration of the subject. As might be expected this method showed a number of subjects who failed on lower ages but who successfully passed the tests of a higher age, which made the question of scoring complicated at times.

Dr. Wallin used the 1908 scale in order that his results might be comparable with those obtained by others. Like others he reaches the conclusion that the 1908 scale needs revision, as some of the tests are too difficult and others are too easy for the ages in which they are placed. He does not exactly agree with Goddard's revision of 1911 and believes that the Binet-Simon scale is still in an experimental stage and that "no pains should be spared to ferret out its present imperfections." He concludes that "there is no other single instrument available which gives us a *superior preliminary survey* of a defective or mentally deviating individual."

It seems needless to say that Dr. Wallin has made a valuable contribution to the psychology of epilepsy and to our knowledge of the Binet-Simon scale.

The book is well printed and is illustrated with a number of graphs. The final chapter gives explicit directions for applying the Binet-Simon scale.

W. R. D.

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Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series, Vol. XVII, Suaheli-Testut. (*Washington, 1912.*)

This volume includes 2357 author titles, representing 3850 volumes and 8490 pamphlets. It also contains 3571 subject titles of separate books and pamphlets and 38,898 titles of articles in periodicals. As might be expected the list of titles belonging under Surgery and under Syphilis occupy more pages than any other subjects.

The value of the Index to the medical profession has been so often previously expressed and is made so obvious by reference to the work that it needs no further reiteration here.

W. R. D.

Thirteenth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the Year ending November 30, 1911. (*Boston: Wright & Potter Printing Co., State Printers, 18 Post Office Square, 1912.*)

There is much in this report of interest, so much in fact, that it is somewhat difficult to select parts to abstract. Massachusetts has always taken a leading place in the care of the insane and defectives and continues to hold this place. It is perhaps indicative of the broad-mindedness which is responsible for this position that we find a statement like the following:

"(c) Recommendation of an *increase in the number of ward physicians.* With an increased number, better work could be performed, and with more time from purely routine work, each member of the staff should be expected to produce some original work or observations each year. Such activity is most desirable in developing a worthy medical spirit in the hospital, and should be encouraged if not demanded. Productions of this character might or might not be valuable to the medical profession, but they would surely aid in the development of the physician who made them, and react favorably upon other staff assistants and the hospital work. Continuous overwork in performance of daily routine may be good for the individual in acquiring habits of industry, but it does not make for the best development of either the hospital physician or service."

Considerable space is given up to discussion of financial affairs which will undoubtedly interest those who are responsible for this part of hospital administration.

Of greater interest are the reports of the two semi-annual conferences which were held and at which were discussed: Measures for improving the conditon and promoting the efficiency of nurses in our state institutions, and the relation of social service to our institutions. The discussions on both of these subjects was stimulating and will well repay perusal. For purposes of reference it would be more convenient were they better indexed and the titles displayed, but this is a very small defect in a most excellent report.

W. R. D.

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Second Annual Report of the State Charities Commission to the Honorable Charles S. Deneen, Governor of Illinois. Springfield, Illinois, December 31, 1911. (*Springfield, Ill.: Illinois State Journal Co., State Printers, 1912.*)

This report is somewhat voluminous occupying 532 pages, the first 278 being given over to reports of visits to various state institutions, or to reports upon such questions as the work of the executive secretary during the year, the dependent child—present system of care inadequate and unsatisfactory—complete state care in state institutions advocated with abolition of the private institution—a plea for the natural rights of the normal child who has been left a dependent upon the charity either of the private citizen or the state, a report by A. L. Bowen, Executive Secretary of the State Charities Commission, upon the closing of the original graveyard at the Peoria State Hospital, with figures on its population and death rate since its opening, etc. While at first sight this seems an unusual way of making a report it is a convenient one and the very full titles well indicate the character of what follows. The remainder of the book is given over to reports of inspections of county jails, of outdoor relief by counties, of inspections of the county infirmaries, and statistics of the county infirmaries. An index concludes the book which is well printed and bound. While there is much of interest in the report there seems to be too much irrelevant detail in parts. Nowhere do we find a list of the members of the commission, or the address of the secretary, or such important matters as the per capita cost, increase in number of insane, etc., yet the programs of the graduating exercises of the training schools are given in full.

W. R. D.

The Psychology of Insanity. By BERNARD HART, M. D. (*Cambridge University Press. New York: G. P. Putnam's Sons, 1912.*)

In this manual, so brief that it may be read without skipping (and surely no reader would be tempted to that) in two evening sessions, the author elucidates with admirable comprehensiveness, and in language that any intelligent layman can understand, the recent developments in abnormal psychology which are attracting so great attention the world over. After a concise review of the history of insanity the reader's mind is gradually prepared for the "psychological conception" of the disease, a conception based on the view that the processes of the human mind can be profitably studied without reference to the accompanying changes which are presumed to take place in the brain itself and that, therefore, insanity may be properly attacked from the standpoint of psychology. Then, applying this conception to the phenomena of insanity, Dr. Hart proceeds to show that these latter are the result of definite psychological causes operating in obedience to definite laws. The chapters on dissociation, complexes, conflict, repressed complexes and projection are the last word on abnormal psychology as nowadays conceived by the modern school. The author's treatment of the repressed complex is a particularly good

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piece of exposition, simplified materially by the use of diagrams showing how direct entrance of ideas and emotions into consciousness may be blocked or resisted. He explains with singular lucidity how, homogeneity having disappeared because the mind contents are incompatible with each other, dissociation arises "as a method of avoiding the storm and stress which the warring of these mutually hostile elements would otherwise inevitably produce." Conflict, therefore, in Dr. Hart's view, would seem to be a fundamental factor in the causation of insanity, though he admits that the significance of conflict is very imperfectly understood and that but little definite knowledge concerning it has so far been established. We do not remember to have read anywhere else a statement of the Freudian doctrines at once so clear and so free from indelicacy. Indeed the volume might safely be placed in the hands of the most sensitive and inquisitive person without exciting the least pruriency.

Let the following summary be quoted not only by way of illustrating the judicial quality of the author's mind but also as a specimen of his lucid style:

"Freud considers that the origin of all cases belonging to certain varieties of mental disease can be traced back to factors connected with a single one of the great instincts, that of sex. We should expect, of course, that the immense power of the sex impulses, and the opposition which inevitably arises between them and the rules of conduct imposed by civilised society, would make this instinct one of the most prevalent sources of conflict and mental disintegration. Nevertheless Freud's generalization is considered by most authorities to be exaggerated, and has not been universally accepted. The evidence produced in its favour is, indeed, not altogether convincing, and, even allowing for the fact that Freud's conception of sex is far wider than is covered by the ordinary use of the term, his theory cannot be said to have been satisfactorily established.

"It is probably safer at the present time to assume that the conflicts in question may involve factors connected with any of the fundamental instinctive forces of the mind, provided that these factors are of sufficient emotional intensity. We shall readily admit that sex probably plays a predominant part in a majority of cases, but shall be prepared to find that a certain number are dependent upon conflicts in which other mental elements are mainly concerned."

Among the "other mental elements" referred to in the foregoing paragraph Dr. Hart lays emphasis on the "herd instinct." Here he has in mind "the mechanism by which the ethical code belonging to a particular class is enforced upon each individual member of that class, so that the latter is instinctively impelled to think and to act in the manner which the code prescribes." And he points out that conflict thus arising is well exemplified in the case of sex where the impulses due thereto are constantly thwarted by the opposing tendencies arising from our moral education and traditions. It is the "herd instinct" of gregarious animals which tends to make the conduct of the individual conform to that of the community as a whole; and here it may be said parenthetically that one

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could hardly have a better illustration of that moulding and compelling force, and of the inevitable conflicts to which it gives rise, than that furnished by Arnold Bennett's recent drama, "Milestones," in which the interplay of Bourbonism and progress suggests the factor in ætiology which the author here considers.

The book is published, at a very modest price, by the Cambridge University Press as one of "The Cambridge Manuals of Science and Literature." We commend it unreservedly not only to the physician, who may learn much, but to the layman, who may learn still more, from its telling lesson.

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Obituary.

IRA VAN GIESON, M. D.

Word has just come that Dr. Ira Van Gieson died in Bellevue Hospital, New York City. The circumstances of his death are not now known.

Dr. Van Gieson is best known to the readers of this journal through his connection, years ago, with the Pathological Institute of the New York State Hospitals, and any account of his life is necessarily largely an account of that institution.

At a time in the early 90's, when scientific psychiatry was practically unknown in this country, Dr. Carlos F. McDonald, then president of the New York State Commission in Lunacy, conceived the idea of the organization of a central scientific department for all of the New York State hospitals. This conception was somewhat ahead of the times, but it was well formulated in the mind of Dr. MacDonald, whose large experience as an executive and administrative officer enabled him to plan this institution along broad and generous lines that would insure a life of productive activities. Through his foresight and wisdom a staff of eminently competent men was secured for the different departments, and Dr. Van Gieson was chosen as its director.

In his capacity as director of the Pathological Institute, Dr. Van Gieson brought to his work an already extensive experience in general pathology, an international reputation as a research worker, and a keen, alert, interested mind that grasped in a comprehensive way the wide ramifications in the collateral sciences of the psychiatry of that day. He formulated the details of Dr. MacDonald's original plans and built up in the institute departments of research along all the avenues of science that contributed to a knowledge of neurology and psychiatry. If there was any fault in his scheme at all it might be said that it was too broad, too comprehensive, and that the average man failed to see the utility of many of its parts.

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Very shortly after the organization of the institute it plunged into active and productive work under the guidance and direction of Dr. Van Gieson, and so long as Dr. McDonald retained the presidency of the Lunacy Commission things went well. Unfortunately for the institute, however, and more unfortunately for Dr. Van Gieson, the administration of lunacy affairs in the State of New York changed hands and, as a result of this change, friction almost immediately arose, the final outcome of which was disastrous to Dr. Van Gieson.

Dr. Van Gieson can best be described in a few words as a genius. He knew none of the rules that applied to the average man. He had a keen and incisive mind, he was alert and full of interest in everything, but he possessed that sensitive organization which made anything approaching control from outside sources utterly unsupportable. He was a spasmodic and irregular worker, when he worked, working with a fervor and depth of distraction that made him utterly forget time, food and sleep, working for days and days without rest, way into the small hours of the morning. These periods of tremendous activity were followed by days of inactivity, during which he did nothing, and sometimes was entirely inaccessible, not even attending his office. He was, however, tremendously productive. During the few best years of his life he gave a great number of valuable articles to medical literature. His work on " artefacts of the central nervous system " is still a classic, while to-day, considerably over ten years after he has ceased to do any active, productive work, one still sees his name frequently in the scientific literature of the world, while when he lived he was easily the best known in Europe of the American pathologists of the central nervous system.

With the change of the administration of the institute, and with Dr. Van Gieson's wise adviser and balance wheel gone, there came a new order of things, a new order that demanded that Dr. Van Gieson should be measured with the rule that was applied to the average man. Administrative methods changed. The director should be in his office at certain hours, he should do certain things at certain times, and the high scientific ideals of the institute must occasionally be laid aside for the more practical purposes of supplying information in matters of hospital administration. Dr. Van Gieson was not an average man and he could not live

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under conditions prescribed for the average man, and therefore the inevitable thing happened. After a long period of storm, which one can only look back upon with the deepest regret, the institute was temporarily torn to pieces and Dr. Van Gieson was forced from its directorship. The institute had become as the breath of his nostrils, it was his very life, and when he was torn away from it he was torn away from the source and the object of all his interests. He never survived the shock, he never was able to recover, and he never again did consecutive, productive work.

Such is the story of one of the most brilliant minds that this country has seen in the department of mental medicine. Dr. Van Gieson's physical death is only an incident in the tragedy of his life.

WILLIAM A. WHITE.

GEORGE S. ADAMS, M. D.

Dr. George S. Adams, former superintendent of Westborough State Hospital, Massachusetts, died at Stamford, Connecticut, on March 16. Dr. Adams had been ill for three days from an attack of influenza when the exacerbation of an old nephritis resulted in a uræmic coma which was rapidly fatal.

He was born of Scottish parentage at Norwich, Connecticut, February 7, 1848.

As an assistant physician he began his work among the insane at Westborough, in 1886, coincident with the opening of the hospital, and five years later, on the resignation of Dr. N. Emmons Paine, was promoted to the superintendency. During the twenty years which followed his appointment as head of the institution, the affairs of the hospital were administered with great ability, and in this long and worthy service was reflected much of the best American institutional care of the insane. After a service of more than twenty-five years at Westborough State Hospital, Dr. Adams resigned last May to become medical director of Dr. Givens' Sanatorium at Stamford, Connecticut.

For twenty years he was a lecturer on clinical psychiatry at Boston University. This is a record all the more noteworthy when one remembers how limited had been his early training in the schools. Beginning life as a journeyman machinist, he edu-

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cated himself by his wide reading and through the night schools. At the age of twenty-eight, in 1876, he was graduated from Hahnemann Medical College, Philadelphia. Save for the first two years, all of his professional life up to the middle of 1912 was spent in Massachusetts. He had been in general practice ten years before he entered the branch of medicine in which he has left behind a record of such fine service. Thougn an executive of acknowledged ability, those who were closest to him professionally think of him at his best as an able and kind-hearted physician, always interested in whatever made for progress in medicine, resourceful, stimulating to his co-workers and beloved by his patients.

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Half-Yearly Summary.

CALIFORNIA.—The State Lunacy Commission has recommended the repeal of the law authorizing the commitment of inebriates to state hospitals, and the establishment of a special institution for their care. It also recommends that a new state hospital be built in Southern California to relieve the congestion in the existing state hospitals.

COLORADO.—*Woodcroft Hospital, Pueblo.*—This hospital has added two sleeping porches, 16 x 50 feet each, to its infirmary building. They are of colonial design, enclosed with pickets up to the porch rail, above that with steel sash 6 x 10 inch lights, protected transom openings on three entire sides. This night care for the sick insane is expected to add to their comfort at least.

The department of occupation has been extended at this hospital to care for a large percent of its patients during the past year.

CONNECTICUT.—The Connecticut Society for Mental Hygiene held a Mental Hygiene Exhibit and Conference at Woolsey Hall, Yale University, New Haven, January 6-11, 1913. The traveling exhibit of the National Committee for Mental Hygiene was the chief feature of the exhibit. Four public meetings were held at which addresses were made by those prominently connected with the mental hygiene movement. In addition six informal meetings were held under the charge of Dr. Albert C. Thomas, formerly assistant physician at Connecticut State Hospital at Middletown, where the exhibit was explained, questions were answered, and stereopticon views shown.

ILLINOIS.—Efforts are being made to establish an inebriate colony, a bill for this purpose having been prepared by State Senator Edmond Beall. The bill provides $250,000 for the purchase of a site and the erection of buildings.

The establishment of a colony for epileptics has been recommended by the State Board of Health.

During the latter part of January, 1913, the National Committee for Mental Hygiene's Exhibit was in Chicago and a number of public meetings were held.

—*Anna State Hospital, Anna.*—A cottage to accommodate 64 chronic women patients is now under construction and will cost $50,000.

The new $65,000 kitchen and bakery was occupied in January after a period of construction of over a year.

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Bids have been advertised for the installation of a new water supply system. It is planned to dam a small stream about four miles from the hospital, to pipe the water to the hospital where a purification plant will be installed.

The driveway to town has always been a source of danger as it crosses a wide ravine over which there is a narrow high grade for a roadway. During the past year a concrete retaining wall, 475 feet long and 27 feet high at its highest point, was built and the driveway was widened with patients' labor. The total cost was $2000 which was $4000 less than if built by contract.

—*Chicago State Hospital, Dunning.*—The Board of Administration has approved plans for two buildings which are to replace those recently burned. The cost of each is $50,000.

—*Peoria State Hospital, Peoria.*—The complete reconstruction of the heating plant and the change from water to steam enabled the institution to pass the first winter in comfort since it was built.

The Men's Dormitory and Staff Quarters are now occupied. This building, together with the Nurses' Home, gives magnificent quarters for all of the resident employes. The cottages occupied heretofore by attendants have been restored to the patients, thus affording excellent housing for 2200 patients.

A farm colony building, one mile from the institution, with a capacity of 50 patients, is completed and an active summer's work on the farm will result.

A herd of 70 dairy cattle, raised in other Illinois institutions, is sheltered in the newly built dairy barn.

The patients of this institution, unaided by paid help, raised 3000 chickens last season and 1000 laying hens were retained through the winter. Each of the 30 cottages and wards of the institution has its flock and its own poultry house and it is expected that this industry will be greatly extended the coming year.

Scarlatina was prevalent during January, February and March and the Hospital for Consumptives was relieved of its occupants and converted into a very serviceable contagious disease hospital. The disease was of a rather mild type but very persistent. It proved fatal in one instance. Many attendants and several patients also had measles.

This hospital is in its 12th year and has 1070 female patients, yet it has never had a suicide on the female side in its entire history.

—*Kankakee State Hospital, Hospital.*—A warehouse for tools has been completed at a cost of $5000.

A new steel truss macadamized roof is being placed over the engine room because the old roof with wooden trusses had become unsafe.

Brooders and other chicken houses have been erected to accommodate 11,000 chickens; this supply is expected to furnish the hospital with fresh

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eggs during most of the year, and also to give a large killing flock during the autumn holidays.

Several registered Holstein yearling heifers have been added to the herd, and also a registered Holstein bull; all cows giving less than 5000 pounds of milk per year have been eliminated from the herd which is being rounded into very good shape.

The cholera decimated the herd of pigs but prompt treatment with serum and vaccine prevented further loss. There are 600 head remaining.

During the spring flood the Kankakee River rose nearly ten feet, establishing a new flood record, but did no serious damage at the institution, although at one time the water was a foot deep on the pump-house floor.

Preparations for the spring work are under way and the lumber has been cut for remodelling Cottage No. 4 South, in the interest of better ventilation, more complete oversight of the patients, and incidentally to increase the capacity of the cottage by 25 beds; the latter, valued at $600 per bed compensates two or three times over for the expense of the alterations.

The plans for a new steel truss roof on the pump-house are being completed, and the work will be done during the early part of the season.

A large gang of patients is digging trenches and laying sewer tile ready for the new laundry which it is expected the present legislature will give in place of the one burned a year ago.

Another large gang of patients is excavating for the nurses' cottage, the contract for which has just been let to John Moroff & Son, a local contractor.

Still another party of patients is being organized to begin the excavations for the continuation of the conduit system which was mentioned in a previous report. This conduit system is now about one-half completed, and it is hoped to have the entire system finished this year. These, it will be remembered, are to accommodate all water, steam and electric lines in roomy surroundings; at present these lines simply run promiscuously under the lawn or through dangerous tunnels actually too small for a man to get through.

The three main kitchens, each supplying food for 1000 patients, and the officers' kitchen, have had the woodwork painted and the walls and ceilings whitewashed.

The bakery has been remodelled, the old floor is being torn out and replaced by terrazzo tile; a spray bath, lavatory, sink, etc., provided in an attached side room; the old flooring and other woodwork torn out from another side room, provides a brick-lined room capable of holding two carloads of flour; an entire new set of working tables, sponge tubs and other utensils is supplied; electric light wiring and fixtures have been made entirely modern; new iron doors of modern construction and overhead hoods are supplied the ovens; the ovens have been rebuilt in their entirety; electric motors have replaced water power motors, and all the woodwork painted and the upper walls and ceilings whitewashed.

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It is planned to lay hundreds of feet of sidewalk and curbing this year, and a concrete mixer with gasoline motor attachment is about to be purchased.

Ornamental shrubs and trees have been purchased to the value of several hundred dollars and are being set out.

The following buildings have been requested of the State Board of Administration and the appropriation will be recommended to the legislature by the board.

A laundry building to cost $35,000, the old one having been burned a year ago.

Steel truss roof for boiler house, $18,000, the present roof having been condemned.

Two cottages for tuberculous patients	$20,000
Contagious disease pavilion	10,000
Cow barn	15,000
Building for male employes now rooming on the wards	90,000
Blacksmith shop	6,000
Warehouse for tools	10,000
Brine system for cold storage to replace ammonia system	3,500

The board also recommends for this hospital, $1000 for horses; $20,000 for improvement of the water system; $1,750 for building a tunnel; $15,000 for iron radiator covers; $1,200 for a domestic hot water heater; $1,600 for a pressure tank for elevators; $3,500 for additions to the dairy herd.

In the way of ordinary operating expenses for 1913, the board recommends an appropriation of $445,570; and for ordinary operating expenses for 1914, $512,089.

In the way of ordinary repairs and improvements, the board recommends an appropriation of $64,000 for each of the two years, or $128,000 in all; and for care and improvement of the grounds, the sum of $2,500 per year. The total appropriation recommended for buildings and permanent improvement for two years amounts to $251,550. For maintenance and ordinary operating expenses, $957,659, and for ordinary repairs and improvements and care of the grounds, $133,000. Grand total, $1,342,209.

On the medical side it can be stated that during the past six months this hospital has admitted on the average five patients per day; in consequence the population has risen to more than 3,050 patients, representing an overcrowding of about 40 per cent. Still, there have been few serious accidents, and it is a pleasure to report that but one suicide has occurred, even under these trying circumstances. The staff has been added to in view of the increased population, and the following physicians have entered the service within the past six months: Dr. E. C. Pratt, Dr. Otis Like, Dr. Walter A. Ford (Interne), Dr. Walter C. Cook. There have been no resignations. During this semester there have been admitted 760 patients, 251 patients discharged and 151 patients paroled. More than half the patients come from Cook County, and a like proportion of the

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paroles and discharges are from that county and these are all paroled into the custody of the Mental Hygiene Society. One of the officers visits the office of the society every two weeks to see such patients as the institution desires to have call there or the society thinks best to have examined.

INDIANA.—*Indiana Hospital for Insane Criminals, Michigan City.*—This hospital was opened for occupancy October 16, 1912. It consists of one building, the plan and equipment of which is thoroughly modern.

—*Southern Indiana Hospital for the Insane, Evansville.*—The new psychopathic hospital was completed at a cost of $85,000. It was opened for public inspection November 15, 1912, and is now occupied. It contains 30 beds for men and the same number for women.

Commodious operating rooms are provided with a complete surgical armamentarium of latest approved type. Duplicate equipment for hydrotherapy is installed in additional wings from the main building. A large solarium is provided for each of the wards.

The kitchen is supplied with an electric range and all food is cooked by this means.

A modern sanitary dairy barn has been built and the institution has acquired a herd of thoroughbred and high grade Holstein cattle which are yielding excellent results.

One hundred acres of adjoining land has been added to the hospital tract.

—*Northern Hospital for Insane, Longcliff, Logansport.*—Staff meetings are held weekly. A thorough system of clinical note taking and making special examinations has been worked out and is being used by all members of the staff.

The pathological department, under the direction of Dr. B. H. Landis, is making routine examinations of urine, blood and sputum and preparations are being made for a routine Wassermann.

A certain number of selected cases of epilepsy are being treated with Crotalin with gratifying early results.

The last legislature appropriated $45,000 for new congregate dining rooms for men and women, $6000 for new boilers, $6000 for new loggias, $12,000 for a new dairy barn, $1500 for a new bake oven.

KENTUCKY.—*Eastern Kentucky Hospital for the Insane, Lexington.*—The patients in this hospital were recently examined for hookworm. The investigation was made by two experts under the direction of the State Board of Health, at the expense of the Rockefeller Foundation.

—*Western Kentucky Hospital for the Insane, Hopkinsville.*—There have been no changes in the treatment of patients in the last year, but a closer

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application of the old methods has been insisted upon and practised. By the old methods are meant those which were adopted about three years ago when the institutions of Kentucky, under the advice of the Governor and Board of Control, attempted, through the various superintendents, to do away with all forms of restraints. This was accomplished in about 12 months, and is rigidly enforced in this institution at the present time. Kindness and individual attention at the hands of trained nurses, directing and interpreting the impulses and peculiarities of the patients together with mental and physical employment of various kinds have proved far more satisfactory and have given better results.

A tubercular colony has been completed and is occupied by about 50 patients. This colony is composed of a center building and seven open air tent houses built on the order of the Nordwack Sanitorium. This has been completed about 18 months and has given even greater results than anticipated.

The organization of the medical staff is as follows: A staff meeting is held twice a week, before which meeting are brought all patients received for mental and physical diagnosis, which diagnosis is made according to the Kraepelin classification. The medical staff has a meeting in the form of a society once a week, before which a paper is read on mental diseases by one of the members.

Modern equipment for hydrotherapy is being prepared, as it has been found very efficient in the treatment of certain forms of insanity.

MARYLAND.—A Mental Hygiene Congress was held by the Medical and Chirurgical Faculty, February 24 to March 1, 1913, at Osler Hall, Baltimore. An afternoon and an evening session was held each day at which stereopticon talks were given and addresses of a helpful character. Considerable interest was shown in the meetings by the general public, the attendance at each meeting averaging about 350. The exhibit of the National Committee for Mental Hygiene was prominently featured and attracted much attention but the occupational exhibit by the various hospitals proved very interesting. It was considered the most successful effort for public instruction that the faculty has made. A special effort was made to familiarize the public with the methods of care of the insane and prevention of insanity. Special emphasis was laid upon recreation, eugenics, education, alcohol and immorality in their relations to mental hygiene.

A Mental Hygiene Committee has been appointed by the Maryland Psychiatric Society, consisting of Dr. Adolf Meyer, chairman, Drs. A. P. Herring, J. C. Clark, J. Percy Wade, R. P. Winterode, and E. N. Brush and Messrs. J. W. Magruder, N. G. Grasty and Louis H. Levin. Dr. W. B. Cornell is executive secretary. At present the committee is making a trial of family care as well as filling the other functions of mental hygiene.

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—*Sheppard and Enoch Pratt Hospital, Towson.*—The trustees of this hospital have planned to celebrate the 60th anniversary of its incorporation by holding a meeting on the afternoon and evening of May 8, and the afternoon of May 9, at which addresses will be made and papers read by members of the staff both past and present, and a number of invited speakers. A dinner to a limited number will be given on the 9th. On the 10th a field day will be held by the patients and men nurses.

MASSACHUSETTS.—The Massachusetts Society for Mental Hygiene has planned an exhibit and conference with the National Committee for Mental Hygiene to be held in Boston during the early part of April.

—*Taunton State Hospital, Taunton.*—Since the last report no new work has been finished, but some new work has been commenced.

At the present time a kitchen and dining room building is under construction at the Raynham Farm Colony which will permit caring for about 25 more patients, bringing the number of that unit up to 100. There is also being constructed a colony group of buildings to accommodate 100 women on another piece of land belonging to the hospital but detached from the main plant.

These two undertakings were commenced the latter part of 1912 and are expected to be finished in the early fall of 1913.

—*Boston State Hospital, Boston.*—The following construction work is under way at this hospital, appropriations having been granted last year:

Ward building for 120 women patients, building for general stores, cold storage, and bakery, addition to electric light plant.

A home for 42 male attendants is completed, also alterations and improvements in south wing of Fisher Group. Following a comprehensive plan for development of the institution, adopted in 1909, special appropriations are requested of this year's legislature for several additional buildings and other improvements.

The past year has been a busy one. The Infirmary Group, accommodating 345 patients, was opened in March, 1912, and the Psychopathic Department on Fenwood Road was opened in June. The capacity of the institution is increased to 1200 exclusive of the Psychopathic Department, where 100 beds are available for an active admission service, partly of committed cases, but to a very large extent of patients detained for temporary care and observation or admitted on the voluntary basis. During the past year the services of a field worker in heredity have been supplied by the Eugenics Record Office, and this research is being continued in connection with the social service work in the Psychopathic Department.

The training school course has been extended to include six months general hospital training, obtained through affiliation with the Boston City Hospital.

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—*Gardner State Colony, Gardner.*—One cottage for 30 men patients was completed and opened early last December.

Two small cottages to accommodate 16 male patients each are well along and will be ready for occupancy early this summer.

During the winter a toy manufacturing department has been started at the Men's Industrial Building and the interest shown by the patients is remarkable.

A small gymnasium has been fitted up at the Women's Industrial Building, and also a culinary department where patients are taught to cook and serve lunches to the other patients daily.

Over 90 per cent of the patients are employed in some useful occupation and they appear to be interested and happy.

—*The Norfolk State Hospital, Norfolk.*—This is a new hospital for the treatment of inebriety and drug habituation, which is being established in the townships of Norfolk and Walpole. The tract of land purchased comprises approximately 1049 acres of cleared and wooded land. The site, made up of hills and low lands, is well adapted for its purposes. The hills, composed largely of broad ridges, allow for natural building sites, while the low lands and valleys are to a considerable extent cleared land affording sites for farms and for agricultural development. The land is abundantly supplied with springs and the State Board of Health has reported that an adequate water supply and an efficient sewerage system can be established at a small expense.

The section of land on which the main hospital buildings are being erected is in immediate contact with the Wrentham branch of the New York, New Haven and Hartford Railroad, 26 miles from Boston, and only a few miles distant from the towns of Wrentham and Walpole.

Approximately one-third of the acreage, 312 acres, has been at one time under cultivation. The cleared land will readily serve as a nucleus for the farm colonies.

$38,789.45 has been expended for the purchase of land, averaging $37 per acre, which includes farm houses and detached buildings. The amount remaining after the purchase of the land has been used for necessary expenses in repairing buildings on the property, and for a complete topographical survey of the entire acreage. A small sum has been held in reserve for the purchase of several small parcels of land under consideration.

Two farm houses near the boundaries of the tract of land have been repaired, and since August 1, 1911, a daily average of 50 patients have lived at these colonies and have been supported by separate maintenance (chapter 754, Acts of 1911). These men have been employed at construction, general repair work, and in the harvesting of crops. The houses are in a sanitary condition and will serve as permanent living quarters. A house with detached buildings in the center of the tract of land is being used as a residence for an assistant physician and his family.

Service buildings and six cottages are now being erected.

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MICHIGAN.—A number of bills have been introduced into the legislature, now in session, that are of interest to the state hospitals. A bill providing for the sterilization of defectives will probably pass both houses, and receive the approval of the Governor. It is not possible, at this date, to predict the final form which the measures will take.

Other measures having to do with the commitment, and the care of the insane are receiving attention from the legislature. Among these may be enumerated an effort to secure greater facilities for the reception into state hospitals of voluntary patients; also a modification of the terms by which inebriates may be detained.

It seems likely that separate provision will be made for the care of epileptics by colonizing them in a new institution.

A civil act will receive attention. If passed in the terms in which the bill is introduced, state institutions will come under the act. Another bill has for its object the abolition of local treasurers for the various institutions, and providing for the payment of all obligations by warrants on the state treasury.

—*Pontiac State Hospital, Pontiac.*—The legislature has been asked for an appropriation of $62,000 for an infirmary building for men; also for $15,000 for a cold storage plant; also for $15,000 for a home for night nurses.

The above constitutes the only contemplated addition to the plant, or to its equipment.

—*Kalamazoo State Hospital, Kalamazoo.*—This hospital is contemplating the installation of a water softening plant, provided the present legislature grants the $7000 requested for this purpose. It is hoped also to secure from the legislature an appropriation of $8000 to enable the institution to acquire the Montague estate adjoining the hospital grounds.

MINNESOTA.—It is reported that the State Board of Control will convert the old Stillwater Penitentiary into a hospital for criminal insane.

NEBRASKA.—*Nebraska State Hospital, Ingleside.*—This hospital has within the past few months completed two small but very complete hydrotherapy rooms, one in the men's, and the other in the women's department.

A new underground tunnel 7 x 7 feet, of concrete, with concrete floor, approximately 1500 feet long, and connecting by electric food elevators the general kitchen with all the hospital and ward buildings, has been completed within the past 60 days, is now in service, and provides a means of transporting food from the general kitchen to all buildings where patients are cared for.

At this time the institution has what is certainly the best pathological laboratory, and pathologist in the middle west. It is doing a large amount

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of general pathological work, Wassermann and supplementary tests, Noguchi modifications, cobra venom, etc., and is under the direct supervision of Dr. H. G. Maul of the University of Denver.

A request is in the hands of the legislature, and seems to be received favorably by that body, asking for a $50,000 appropriation for the erection of a modern tubercular cottage for the care of this institution's tubercular insane, which, if secured, will not only add very greatly to the security from tubercular infection of recent admissions, but will also provide a better means of caring for all tubercular cases. It is planned that the cottage will accommodate 50 men and nearly the same number of women.

NEW HAMPSHIRE.—*New Hampshire State Hospital, Concord.*—A new unit has been added to the hospital. This building will have at present a capacity of 212 patients, with accommodations for several employees. With one added wing the ultimate capacity will be 424 patients. There is a kitchen and a congregate dining room for the patients. As far as possible the patients will be of the industrial class, the men comprising those who work on the farm, in the laundry, and shops, and the women including those who are employed in various capacities about the institution.

A legislative appropriation has been asked for, and if granted a new carpenter shop will be erected near the power station. The old power station is already being made over into an industrial building. The first floor is used as a paint shop where from ten to twelve men patients are employed. On the same floor is another large industrial room where printing, rug, and brush making are carried on. As soon as the carpenter shop can be moved to its new location the second floor will be finished into industrial rooms for broom making, cobbling, and shoe making, and upholstery. The mattress and broom making are now carried on in another building. By these changes all the various men's industries will be segregated in the one building which will be made as nearly fire-proof as possible, with granolithic floors and brick walls.

The third year in the Training School Course has proved to be a wise addition to the curriculum. During this year the third-year students who have demonstrated their fitness serve out their allotted time in the hospitals and district nursing association with which the State Hospital is affiliated. During this third year also the nurse serves two months in the hospital diet kitchen. The lengthening of the course gives the nurse ample time in which to gain her practical experience in surgical and obstetric nursing, and sick room cooking.

NEW JERSEY.—During the week of February 10, 1913, the exhibit of the National Committee for Mental Hygiene was held at Princeton where it excited considerable interest.

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—*New Jersey State Hospital, Morris Plains.*—In continuance of the endeavor to procure a pure water supply and to have the water from this source easily accessible, a pipe has been laid from a spring on the mountain behind the hospital to a specially equipped house where the water to be used for drinking purposes throughout the hospital will be bottled under hygienic conditions and close supervision.

The new kitchen at the main building was opened on March 3, after having been a source of contention between the Board of Managers and the contractor for nearly two years because the latter would not complete his contract according to its specifications.

The building for patients suffering with tuberculosis was opened on February 1 and is being used for male patients.

The nurses' home for men is completed but must be furnished before being occupied. This will be done during April.

Electric wiring of the main building was begun in November and is nearly completed. The contract for fixtures has not yet been awarded.

Work on the installation of new boilers was begun in January and is to be finished by May 15. Fortunately the past winter was a mild one, and no suffering followed the tardy commencement of this important and necessary undertaking. Contracts were awarded in March, the work to be commenced in April for an enlargement of the laundry, an addition to the home for women nurses, and a new accessory dairy barn.

No changes in the staff occurred during the last six months, but a resident dentist was employed two months ago.

Moving pictures have been given at least every two weeks during the winter. They are looked forward to by the patients, and have a marked beneficial effect on nearly all who are able to be present.

Plans for a two-story building to house workshops for both men and women have been prepared by the State Architect, and have been duly approved. Bids for the erection of this will be advertised for in the near future. A room has been fitted up temporarily where raffia work, embroidery, arts and crafts, hand painting, etc., are being done by the patients.

The overcrowded condition is continually becoming more serious. There are 720 patients in excess of the normal capacity. In the last annual report a request was made that if nothing else be done a commission be appointed to enquire into this state of affairs and report to the Governor. The recovery rate is decreasing and the death rate growing larger, both of these apparently being due to the overcrowded condition of this hospital which prevents proper classification and segregation of patients.

Steps are being taken in connection with the United States Bureau of Immigration to return all aliens whose insanity is due to causes existing prior to landing and who have not been in the country three years, and also to return to other states those not having a legal settlement in New Jersey.

A large hospital exhibit was sent to the New Jersey Conference of Charities and Corrections at Plainfield and also to the Conference on

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Mental Hygiene at Philadelphia. The exhibit consists of "heredity charts," photographs of laboratory findings, charts showing at a glance a person's mental condition throughout life, recovery rates, percentage of persons admitted suffering from each psychosis, photographs of buildings and methods of treatment, pointed epigrams showing the causes of insanity, necessity for early treatment, and prophylactic measures likely to prevent such conditions. This exhibit was prepared at considerable expense and much time by the officers of the hospital.

In addition to the scientific material gathered together in this exhibit a quantity of patients' work has been included in it to give the public an idea of the means employed in the re-education of patients. This exhibit is to be shown throughout the state in an endeavor to interest all serious-thinking people in the problem of better state care of dependents and the necessity of more pronounced preventive measures if the number of insane persons is to be diminished and also to show what is now being done with the limited means at disposal to aid the insane.

NEW YORK.—During November, 1912, an exhibit and conference was held by the National Committee for Mental Hygiene in conjunction with the adjacent state hospitals and individuals interested in this subject. The meeting was a most successful one and an appeal was made to create an endowment fund of $200,000 to enable the committee to extend its research work to many localities.

A clearing house for defective children was opened October 22, 1912, at the Post-Graduate Hospital, New York City, under charge of Dr. Max G. Schlapp. It is believed that it will accomplish much good.

—*Letchworth Village, Thiells.*—Contracts have been made for the construction of four dormitories, an attendants' home, dining hall, laundry, power plant, and storehouse at Letchworth Village, the new state institution for feebleminded and epileptic.

—*Matteawan State Hospital, Fishkill-on-Hudson.*—A new ward is nearing completion for the women patients. A new coldstorage plant is about to be constructed.

—*Rochester State Hospital, Rochester.*—Fifty acres of farming land, with a farm-house, contiguous to the present hospital property, have been purchased.

Plans for an additional Nurses' Home and improvements to the Lake Farm Cottage, on the shores of Lake Ontario, are being prepared.

—*Buffalo State Hospital, Buffalo.*—The new pavilion for contagious diseases, erected on the grounds, was opened for the care of patients with contagious diseases December last, and can accommodate about ten. The building is in bungalow style and so arranged that it can be divided, not only to care for men and women, but also sub-divided to care for different forms of contagious disease, in larger and smaller numbers, etc.

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A building on the bungalow plan, for cases of tuberculosis among men, has been planned, and will undoubtedly be commenced this spring, provided supplemental appropriation therefor is passed by the legislature. This building will form a counterpart to the pavilion for women, erected a short time ago.

The lakeside farm and colony on the shores of Lake Ontario, at Wilson, N. Y., which for four years has been a very important and efficient aid to recovery in patients, has been lost to the hospital, as the lease expired and the property was sold. The bill providing for its purchase failed to become a law, and this lakeside resort, much-beloved by the patients, passed into other hands. No new location has as yet been selected.

An electric water purifying apparatus has been installed at the hospital.

—*Hudson River State Hospital, Poughkeepsie.*—Work progresses on the new additions to the hospital. The extension at Edgewood, comprising Wards 46 and 47, is enclosed and requires only flooring and trim. This applies to the additions to the Reception Hospital and both will provide greatly needed accommodations for disturbed patients.

As the Hudson River State Hospital Training School is registered and supervised by the State Education Department, a suggestion of that department has been met by the establishment of a lecture and demonstration room in the main building. Heretofore the class lectures have been given in the waiting room of the clinic and the two activities frequently have conflicted. With training school work, and instructions to the recently employed attendants, the lecture room will be put to good use.

The arts and crafts class also has been supplied with a satisfactory workroom in the industrial block. The quarters are light, pleasant, sufficiently removed from the wards, and yet accessible without exposure to inclement weather. This feature of hospital activity has received considerable attention during the past three years. Trained instructors make an effort to supply diverting occupation for those patients who, by reason of mental and physical infirmities, are unable to take part in other forms of occupation, and it is desired to make these workrooms as attractive as possible.

Pleasant accommodations for forty women nurses have been furnished by the finishing of the third floor over Wards 7 and 8. With the greatly increased population of the hospital many of the wards were overcrowded and rooms for the additional nurses could be found only by taking single rooms on the wards. Keeping the room doors closed made the wards dark, but the accommodations for the forty additional nurses will in a measure relieve some of the overcrowding and supply comfortable and homelike quarters for the nurses.

The hospital having outgrown the accommodations of the steward's office, the work of that department for several years past has been done in a space entirely inadequate, a two-story extension 25 x 25 has been planned and the work will be started as soon as the weather permits.

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The new water line under construction for the past six months is in a fair way to be completed this spring. With the installation of a sedimentation basin which is a part of the work under contract, the filter beds will have much less work to do and will not require the frequent cleaning which interferes with their present efficiency.

—*St. Lawrence State Hospital, Ogdensburg.*—Considerable work is being done along th· line of psycho-analysis. This with patients in the hospital, and psycho-neurotics requesting aid at the dispensary.

Moving pictures weekly continue a pleasing form of entertainment for the patients, the reels being carefully selected for suitable pictures.

The new carpenter and blacksmith shop has been completed. This gives decidedly more room and should add to the efficiency of the work. Prior to removal to the new quarters, the shop was located over the dynamo room—a decidedly dangerous location in the event of fire occurring.

The new incubator and brooder has been completed, allowing of more profitable poultry raising.

An old barn has been remodeled, providing quarters for young cattle.

The new root cellar is completed. This will allow for a more economical storage of vegetables.

The industrial department has manufactured numerous cement blocks for building an ornamental cement wall on the hospital boundary line.

—*Utica State Hospital, Utica.*—In October, 1912, the hospital acquired a tract of 932 acres of land in the town of Marcy for a new site. Two farm colonies have been established there and active agricultural operations are in progress. New buildings have not yet been started but several of the structures already on the property have been altered to accommodate patients.

A vocational school in charge of a trained instructor has been established.

The county of Onondaga has been added to the district of this hospital.

A transfer of 50 women patients was made to the St. Lawrence State Hospital on March 11, to relieve the overcrowding which prevailed in this institution.

A cold storage and ice plant was completed recently and is now in operation.

On March 21 the hospital was visited by a cyclone and much damage resulted to the grounds and buildings. One of the large elms bordering the main drive was among the many trees that were blown down.

—*Binghamton State Hospital, Binghamton.*—Plans are practically completed for extensive renewals in the electric equipment of the hospital. The present lighting system was installed twenty years ago, and the "direct" current was made use of. The new plant will be the "alternating" system and the dynamos will be located at the general hospital

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power plant on the bank of the Susquehanna River, instead of on the hill where now located. Plans are also nearly completed for an extensive addition to the laundry where facilities have been inadequate for a long time past. The proposed addition will be 45 x 80 on the ground and two stories high. Considerable new machinery will be installed.

An addition to the hospital bakery has been erected, which will provide on the first floor a large bread-room and on the second floor two rooms for employees. At the summer camp, known as "Pine Camp," as soon as the weather conditions admit, three small frame structures will be erected with shingle roofs and canvas sides, to replace tents no longer serviceable. The camp, with improved facilities, will be opened for about thirty patients the latter part of May, and will be conducted in the same general manner as in previous years.

Under the direction of the Bureau of Deportation, a number of foreign-born patients have been deported during the past six months. Nurses from the hospital have accompanied several parties of this character to England, Ireland, and Germany.

The hospital now cares for 2391 patients, whereas the certified capacity is 2110. To relieve the overcrowding the legislature has been urged to provide funds for a new building to accommodate 400 women. An excellent site for such a building is available and it is believed the construction could be accomplished at this hospital at lower cost than in any other part of the state.

Early in January Dr. R. R. Williams, an assistant physician in this hospital, was detailed for a two months' special course of instruction at the Psychiatric Institute, New York City, under the direction of Dr. August Hoch, the Director of the Institute. A number of physicians from other hospitals attended this course at the same time. The instruction dealt largely with psychanalysis in its application to the diagnosis and treatment of insanity, organic and functional disorders, the anatomy of the nervous system and aphasia. On his return to the hospital Dr. Williams was assigned to duty on the acute hospital service.

In October, 1912, a meeting of physicians from a number of the other state hospitals was held here, at which the medical member of the State Hospital Commission, Dr. James V. May; Medical Inspector, Dr. Walter G. Ryon; Director of the Psychiatric Institute, Dr. August Hoch, and Chief Associate in Neuropathology at the Psychiatric Institute, Dr. Charles B. Dunlap, were present. The meeting covered two days and many papers were presented, most of which have since been printed in the State Hospitals Bulletin.

—*Manhattan State Hospital, Ward's Island.*—The following is a list of improvements made during the past six months. These improvements, which were mentioned as being under way during the previous six months, are now completed: Installation of electric wires, underground conduit, heating system in female home, extension of roads and cement walks.

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The rebuilding of the third story of the Psychiatric Institute has not yet been completed. The tin and iron gutters and leaders on dining room 4, addition to Staff House, Ward 20, storehouse building, kitchen 2, and the steward's cottage have been replaced with copper. The interior of Ward 59 and exterior of east building have been painted.

The following improvements are now under way: Compressor room at power house, camp for tubercular men, installation of therapeutic apparatus in two new cottages, the equipment of entire institution with new locks, addition to assembly hall and new mortuary.

One woman attendant is recovering from an attack of measles.

As mentioned in a previous report Central Islip receives approximately one-half of the patients committed from the Manhattan district.

—*Rome State Custodial Asylum, Rome.*—The enactment by the last legislature of a law granting to the institution the power to parole inmates and also a law allowing the reception of children for purposes of observation without formal commitment, have served exceedingly useful purposes in both particulars. Thirty-six paroles have been granted during the year, 26 boys and ten girls. Fifteen patients have been received for observation, eight boys and seven girls.

A recent decision of the Attorney-General relative to the retention and discharge of inmates not in indigent circumstances, has served to curtail greatly the power of the managers to retain, under the custodial law, many patients who should, for the good of the community as well as for the individual best interests, be retained in custody here.

The decision is based on one or more apparent defects in the organic law, which defects should be remedied by the incoming legislature amending the law wherein it provides only for the commitment of indigent cases, and also wherein it provides that commitments shall be made by the superintendent of the poor of the counties or commissioner of charities of Greater New York.

The law should be amended to provide for a judicial or court form of commitment of feeble-minded persons whether indigent or not, and such other legislative enactments as will give the managers permanent custody over such cases as should be retained in the asylum, for their own good as well as for the protection of society in general.

The manual training and physical education work has been materially extended during the past year to the great benefit of the inmates, especially of the lower grade, and to the general uplift of the tone of service throughout the institution generally. A larger variety of entertainments has been introduced, especially a moving picture machine, a number of phonographs, and a piano for every ward. Also, musical instruction has been extended to a much larger number of inmates, all of which greatly facilitates the matter of easier management, and especially more satisfactory discipline. The amusement, entertainment and diversion of inmates help to a great extent to keep them from getting into mischief and trouble, also to diminish greatly the amount of extreme discipline ordi-

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narily required among inmates of this character, especially the delinquent feeble-minded class, of which a larger number than ever before have been received.

The farm colony idea is being extended further as it has proven very practical, as well as economical, in carrying on institution work of this character.

—*Craig Colony for Epileptics, Sonyea.*—Part of the new school building which has been constructed has been occupied since February 1, 1913. Regular classes are held in arts and crafts, manual training and ordinary school branches.

The new dormitory to replace the Six Nations Dormitory for male patients will be ready for occupancy about June 1, 1913.

Advertisements have been inserted calling for bids on a water softening and filtering plant to have a capacity of at least 200,000 gallons daily.

The third floor of Spratling Hall, the administration building at the colony, is being finished off into rooms for officers.

Plans are practically completed for the erection of four employees' cottages, a new barn to replace one condemned, the remodeling of the basement of the dairy barn and the erection of a cold storage plant in connection with the present store.

Aster and Bluet Cottages in the Villa Flora Group have been remodeled and replastered throughout.

The north subway, permitting the main highway to pass beneath the Pennsylvania Railroad tracks, is being materially improved by the erection of a new bridge and widening of the road.

There is continued difficulty in securing attendants, probably because of the isolation of the institution, the incomplete facilities for housing attendants and the low mental grade of many of the patients to be cared for, for which class the facilities are not as complete as they should be.

It is to be regretted that this institution was unable to secure the approval of the supervisory bodies for the employment of field workers, in co-operation with the Eugenics Record Office. The State Board of Charities created about two years ago a Bureau of Analysis, which ultimately will obtain for the colony much data in regard to heredity.

North Dakota.—*State Hospital for the Insane, Jamestown.*—Present population 855, of which 531 are males and 324 are females.

Improvements contemplated (granted by recent legislature):

Receiving ward and hydrotherapeutic equipment	$100,000
Tubercular building for men	100,000
New boiler house and equipment	65,000
Outside ward and farm building	30,000

Recently completed:

Female ward building	100,000

Modern dairy barn with modern equipment, capacity, 125 cows.

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Abattoir of up-to-date construction. Using which and buying cattle on the hoof has saved the institution a net sum of $100 a month since installing.

OHIO.—*Massillon State Hospital, Massillon.*—Nothing particularly new is being exploited in this hospital. The new building, to be used for educational and diversional purposes, is almost completed. It is two stories, with high basement. In the basement there are billiard and pool tables, bowling alleys, tables for games of different kinds, and the shower baths.

On the first floor there is the school room proper, in which it is hoped to utilize common school methods, both for education and diversion. The services of a college man have been secured, whose affliction is so slight that it will not materially interfere with this work. There is also, upon the first floor, a large room which will be used as a library and reading room for the patients in the day time, and for the employees in the evening.

The second floor is a room 45 by 60 feet, which will be used for a gymnasium and drill room.

The whole idea of this educational and diversional building is yet to be wrought out, but it is hoped that great good will result to the patients.

PENNSYLVANIA.—A Mental Hygiene Exhibit and Conference was held in the City Hall, Philadelphia, March 15-22, 1913. The exhibit of the National Committee for Mental Hygiene was prominently featured but exhibits were made by the nearby hospitals and by several of the New Jersey institutions. The meetings were well attended and did much to arouse a general interest in mental hygiene.

—*State Hospital for Insane, Male Department, Norristown.*—At present the medical staff consists of one resident physician, four assistant physicians and one interne, the position of fifth assistant physician being vacant at this time.

The office building for the chief physicians is now almost completed and will be occupied in a short time.

The hydrotherapy building is completed and the apparatus is being installed. It will be ready for use during April.

On January 3, 1913, 67 criminal and convict patients were transferred from the male department to the State Hospital for Criminal Insane at Fairview, Wayne County. This affords great relief as the institution was not constructed to hold some of the more clever criminal patients. There are still 59 criminals and 49 convicts in the institution, who will be removed at a later date.

The industrial work, such as basket making, rug weaving, brass work, carpentry, and brush making, continues to be used as a therapeutic measure, especially during the winter months when employment out of doors is necessarily impossible.

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An industrial building will be occupied during the coming summer and this will greatly facilitate the work.

The $5000 appropriation for remodeling the tuberculosis cottage was found to be inadequate and was turned back to the state. The legislature will be asked for an appropriation for a new tuberculosis cottage and a reception building, both of which are much needed.

—*Warren State Hospital, Warren.*—The laboratory has been remodeled and the best modern equipment installed. An index system is carried on so that the pathological findings are readily available and the work of the clinician, eugenics field worker, and pathologist are correlated. The number of autopsies has increased to 85 in one year. Routine complement deviation tests for syphilis are made on every patient and, except for the feeble, all are immunized against typhoid fever. One hundred attendants have volunteered to be immunized. Since the routine immunization has been established one case of typhoid occurred and this was so mild that the diagnosis was only made positive by blood culture.

—*Eastern Pennsylvania State Institution for the Feeble-Minded and Epileptic, Spring City.*—Application has been made, to the legislature of the state of Pennsylvania, for sufficient funds to erect a number of buildings, in the department for women, as well as to provide quarters for the purely custodial cases, and a small hospital building. Up to the present time no hospital building has been provided, which is a necessity in a community of some 550 defective individuals.

This institution has taken an active part in the conference and exhibit on mental hygiene, held in the city of Philadelphia, on March 15-22,—not only in the line of exhibit, but in connection with the program as well.

The main aim of the training school, in this institution, has been to provide the greatest amount of training for the greatest number possible, and to provide such training as will be absolutely of use to the individual in his subsequent life in the institution, recognizing that the cases cared for are purely custodial cases. In the furtherance of this plan, manual training plays a great part in the school work. The child is taught to read and write, as well as the simpler forms of arithmetic, and these branches particularly in the terms of those things constantly at hand.

The new laundry building is about ready for occupancy, providing permanent quarters for this important work, as well as tailor shop, shoe shop, sewing and repairing rooms, etc.

The permanent power plant is also nearing completion, which will include the direct current plant for the central buildings, as well as an alternating section, supplying current to the outlying farm buildings, etc. This building also includes a cold storage plant, as well as coal storage and ash handling facilities.

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—*State Hospital for Criminal Insane, Fairview.*—The board of trustees of this hospital has asked the legislature for an appropriation of $2,000,000 to complete the buildings, and their equipment, and for maintenance.

RHODE ISLAND.—*Butler Hospital, Providence.*—In the work of the laboratory much has been learned in regard to the etiology of many obscure cases through the Wassermann test. This test is now made, of course, in all cases in which there is a history of syphilis, or in which there is reason to suspect a probable syphilis of the central nervous system. Much information has also been gained in cases of cerebral hemorrhage of obscure origin, and with the information at hand it is probable that a number of them are due to a syphilitic endarteritis.

A few cases of general paresis have been treated with salvarsan, followed a few hours later by lumbar puncture. A small amount of cerebral spinal fluid is withdrawn and an equal amount of the patient's blood serum is taken following the injection of salvarsan, and introduced into the spinal canal. In one case this has been repeated twice, but so far the data at hand are insufficient from which to draw any positive conclusions. This treatment will be given a trial, and in the light of the recent findings of the treponema in the brains of paretics by Noguchi and Moore, it is believed that anti-syphilitic treatment may, in the future, be of more avai. in cases of tabes and general paresis than in the past.

One member of the staff has recently returned from Germany, after spending six months in Munich, and as the result of study and observation there, has called attention to a number of cases of "mixed" manic-depressive insanity. It is believed that in the "mixed" cases the psychosis continues longer than in those not presenting the mixed symptoms.

Occupation therapy for both men and women is holding a more and more important part in the hospital work every year, and the percentage of patients occupied is now greater than at any other time.

The William H. Potter Home for Nurses, costing $79,000, was opened last November.

The hospital is now building a modern operating room.

UTAH.—*State Mental Hospital, Provo.*—A new dairy and horse barn is just being completed. It provides accommodation for fifty Jersey cows and sixteen horses. It is built of concrete and pressed brick and furnished with patent stanchions and feeding troughs. Rooms are provided for the farmers, complete with bath and toilet.

A new bake oven has been installed which has a capacity of 350 loaves per baking. A new range, steam cookers, and other apparatus have been installed in the kitchen. A new 72-inch mangle and an extractor have been installed in the laundry. The dairy has been equipped with a new barrel churn, cream vat, milk cooler, sanitary milk pails, Babcock milk-testing apparatus, and a new sink.

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All of the buildings have been rewired by the engineering staff on the conduit system.

New maple floors have been laid in eight wards and in the Administration Building, and the remaining wards and rooms will be re-floored during the year.

A new concrete reservoir of 250,000 gallons capacity has been built and it is contemplated piping the water from an unfailing mountain spring in the canyon three miles distant which will give a pressure of 110 pounds.

A new section has been added to the greenhouse. A new piggery will be built.

Occupation continues to be extensively employed. Besides the regular industries, rugmaking, basketry, manual training, and a school room give ample opportunities for re-education.

Baseball, croquet, and passball are the chief out-door recreations, while a dance or entertainment each week, except during the summer, provides amusement when out-door games cannot be indulged in.

VIRGINIA.—*Western State Hospital, Staunton.*—A solarium has been built to the infirmary, also a building containing 100 single rooms, in which it is intended to place all noisy patients, consequently relieving the others who are more quiet. It is of brick, is three stories high and was constructed largely by patients' labor at a cost of about $110 per bed.

About 5000 peach and apple trees have been planted during the past few years.

WISCONSIN.—*Milwaukee Hospital for Insane, Wauwatosa.*—Three story balconies, 80 feet long and 16 feet wide, have been provided on both wings of the hospital. These balconies have proven a veritable boon to the patients, enabling them to enjoy fresh air in all kinds of weather. During the hot spell in summer, the balcony doors were kept open all night and any patient desiring to go out on the balcony during the night was allowed to do so. One-half of these balconies are at present being enclosed in glass and open directly out of the alcove of each ward and are steam heated. They will form beautiful conservatories and provide a most attractive retreat for the patients on these halls. Three story balconies, 12 feet in width, facing the east and north at the end of the north wing, and east and south at the end of the south wing, were provided for the use of the patients on the back wards. Sleeping porches were constructed on these balconies which take the place of the old wooden porches which were torn down to make way for the new balconies. They are enclosed in glass, are steam heated, and are rather more commodious than the old porches, accommodating eight patients each, instead of three as formerly.

New plumbing has been installed throughout the hospital, the floors of the water closets and wash rooms laid in tile and the walls furnished with a tile wainscoting to a height of five feet. Concrete floors and asbestos

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board ceilings were installed in all of the fire escapes and clothes rooms throughout the building. New sanitary floors have been laid throughout the short halls of the building and constitute one of the most satisfactory and sanitary improvements yet made.

Gas has been installed for cooking purposes in the kitchens and has proven advantageous in every way. The kitchens are comparatively cool now, particularly the officers' kitchen, which, under the old conditions was a source of great discomfort to the cook and the patients working with her, besides being free from soot. Small gas plates were also installed in the diet kitchens of the hospital wards.

Two Mitchell automobiles, one with tonneau deep enough to carry a patient on a stretcher, if necessary, were purchased last spring for the purpose of conveying patients from their homes to the hospital. When not in use, parties of patients are frequently taken for pleasure rides throughout the country and to the various city parks, and they seem to enjoy the diversion immensely.

A new hot house, 16 feet wide and 100 feet in length, has been erected and has been the means of supplying the patients with a liberal amount of fresh vegetables throughout the entire year, as well as affording healthful occupation for a large number of patients.

The electric wiring throughout the entire hospital was gone over and all defective wiring replaced. This wiring is enclosed in conduits.

A pavilion of split boulder construction was erected in the men's grove. This is not only a very substantial but very ornamental structure and was built by the carpenter assisted by patients. A concrete pergola east of the lake and adjacent to the lily pond and a broad terrace with ornamental balustrade overlooking the park and lily pond were constructed and add very materially to the beauty of the surroundings as well as affording a most beautiful view looking toward the east. This concrete pergola was exclusively the work of one of the patients, who exhibits great aptitude for work of this kind.

Cement blocks are being made for the foundation of the new bakery. This will be a two story brick building, the lower floor of which will be devoted to the use of the bakery, while the second story will be used for sleeping quarters for men employed on the farm, departments, night watches, etc., and will be the means of relieving the congestion in the north rear. The building at present used for the bakery will be given over to the laundry, where new modern machinery has been installed and where this additional space is greatly needed.

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Appointments, Resignations, Etc.

ADAMS, DR. FELIX M., appointed Superintendent of Eastern Oklahoma Hospital for the Insane at Vinita.

ADAMS. DR. GEORGE SMITH, formerly Superintendent of Westborough State Hospital at Westborough, Mass., died at Stamford, Conn., March 17, 1913, aged 64.

ADLER, DR. HERMAN E., appointed Chief of Staff of Psychopathic Hospital at Boston, Mass., June 1, 1912.

ALDRICH, DR. EDWARD G., for thirteen years Assistant Physician at Buffalo State Hospital at Buffalo, N. Y., resigned October 10, 1912, and is at present residing in Warner, N. H.

ALSPAUGH, DR. P. J., Second Assistant Physician at Massillon State Hospital at Massillon, Ohio, promoted to be First Assistant Physician.

ANDERSON, DR. JOHN B., Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician February 1, 1913.

ANDERSON, DR. VICTOR V., appointed Assistant Physician with special duties in the Out Patient Department at Psychopathic Hospital at Boston, Mass., October 1, 1912.

ANDREWS, DR. B. F., Third Assistant Physician at Craig Colony at Sonyea, N. Y., resigned February 1, 1913, to enter private practice in Rochester.

ANDREWS, DR. WM. A., appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., January 1, 1913.

APGAR, DR. RAYMOND, appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., March 23, 1913.

ATHERTON, DR. C. C., Assistant Physician at Elgin State Hospital at Elgin, Ill., appointed Senior Physician at Lincoln State School and Colony at Lincoln, Ill.

AUER, DR. EDWARD M., appointed Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., November 2, 1912.

BARNES, DR. FRANCIS M., JR., Senior Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Clinical Director October 1, 1912.

BETOWSKI, DR. PAUL E., Junior Assistant Physician at Craig Colony at Sonyea, N. Y., transferred October 15, 1912, to be Assistant Surgeon at State Soldiers and Sailors Home at Bath, N. Y.

BIGGS, DR. M. O., appointed Superintendent of State Hospital No. 1, at Fulton, Mo.

BLACKMAN, DR. MARION E., appointed Medical Interne at Rochester State Hospital at Rochester, N. Y., October 1, 1912.

BLES, DR. VICTOR A., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

BOOTHFIELD, DR. JAMES FRANCIS, formerly Assistant Physician at Westborough State Hospital at Westborough, Mass., died January 12, 1913, from influenza, aged 47.

BORDEN, DR. PARKER G., appointed Medical Interne at Buffalo State Hospital at Buffalo, N. Y., March 17, 1913.

BOSWORTH, DR. E. D., JR., appointed Assistant Physician to Out Patient Department at Psychopathic Hospital at Boston, Mass., October 1, 1912.

BRADLEY, DR. W. P., appointed Superintendent of State Hospital No. 3, at Nevada, Mo.

BRADY, DR. EMORY J., Assistant Physician at the Kalamazoo State Hospital at Kalamazoo, Mich., nearly nine years, resigned December 25, 1912, to become Assistant Superintendent at Newberry State Hospital at Newberry, Mich.

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BRIDGMAN, DR. OLGA, Physician at Illinois State Training School for Girls at Geneva, transferred to Lincoln State School and Colony at Lincoln, Ill.

BRIGGS, DR. L. VERNON, appointed a member of the Massachusetts State Board of Insanity.

BROWN, DR. SHERMAN, Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., appointed Medical Superintendent of the Kenilworth Sanitarium at Kenilworth, Ill.

BROWNLEE, DR. H. C., Assistant Physician at Texas State Hospital at Austin, resigned to be Field Director of the State Hookworm Commission.

BUSEY, DR. A. P., Superintendent of State Hospital for the Insane at Pueblo, Col., appointed Superintendent of State School for Feeble-Minded at Arvada, Col.

CHAMBERLAIN, DR. LESLIE, Assistant Physician at Warren State Hospital at Warren, Pa., resigned on account of illness.

CHARLTON, DR. C. W., appointed Second Assistant Physician at Nebraska State Hospital at Ingleside.

CHENEY, DR. CLARENCE O., Medical Interne at Manhattan State Hospital at Ward's Island, New York, transferred to Psychiatric Institute, January 1, 1913.

CHILDS, DR. JOHN H., Assistant Physician at Manhattan State Hospital at Ward's Island, New York, resigned October 2, 1912.

CLARK, DR. FRED. B., Superintendent of Chicago State Hospital at Dunning, Ill., resigned.

COBB, DR. GARDNER N., Assistant Physician at Gardner State Colony at Gardner, Mass., resigned November 29, 1912, to become Surgeon on the Massachusetts Training Ship.

COFFIN, DR. W. K., appointed Interne at Psychopathic Hospital at Boston, Mass., October 1, 1912, and resigned November 1, 1912.

CONTER, DR. A. E., appointed Assistant Physician at Florida Hospital for the Insane at Chattahoochee.

COOK, DR., Physician at Ohio National Soldiers Home at Dayton, appointed Third Assistant Physician at Mt. Pleasant State Hospital at Mt. Pleasant, Iowa.

COOK, DR. WALTER C., appointed Assistant Physician at Kankakee State Hospital at Kankakee, Ill.

CORNELL, DR. WILLIAM B., Assistant Physician at Danvers State Hospital at Danvers, Mass., resigned December 1, 1912, and appointed Executive Secretary of Mental Hygiene Committee of the Maryland Psychiatric Society.

CORSON, DR. FRANCIS F., formerly Superintendent of New Jersey State Village for Epileptics at Skillman, died February 1, 1913, from heart disease, aged 65.

COUCH, DR. MARY KATHERINE, appointed Assistant Physician at Northampton State Hospital at Northampton, Mass.

CRICE, DR. J. T., Assistant Superintendent of Central Kentucky State Hospital at Lakeland, resigned.

CRUTCHER, DR. W. H., appointed First Assistant Physician at Nebraska State Hospital at Ingleside.

DARNALL, DR. R. F., Assistant Superintendent of Woodcroft Hospital at Pueblo, Col., resigned.

DAVIDIAN, DR. HAGOP, Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician, February 1, 1913.

DAVIDSON, DR. A. J., appointed Third Assistant Physician at Central Kentucky Asylum for the Insane at Lakeland.

DAVIS, DR. EUREY G., appointed Third Assistant Physician at Western Kentucky Asylum for the Insane at Hopkinsville.

DENENDORF, DR. FREDERICK C., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, November 30, 1912.

DIXON, DR. FRANK H., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., December 6, 1912, and promoted to be Junior Assistant Physician February 1, 1913.

DOBSON, Assistant Physician at Worcester State Hospital, appointed Assistant Physician at Boston State Hospital at Boston, Mass., February 1, 1913.

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DOOLITTLE, DR. GLEEN J., appointed Medical Interne at Craig Colony at Sonyea, N. Y., October 1, 1912.

DUNLAP, DR. CHARLES O'NEIL, formerly Superintendent of Athens State Hospital at Athens, Ohio, died February 13, 1913, from interstitial nephritis, aged 56.

DUNN, DR. CLARA, Assistant Physician at Chicago State Hospital at Chicago, Ill., transferred to State Training School for Girls at Geneva, Ill.

DUNNING, DR. RALPH H., Junior Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to be Assistant Physician March 18, 1913.

DYNAN, DR. NICHOLAS J., Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician October 1, 1912.

ECKEL, DR. JOHN L., Assistant Physician at Buffalo State Hospital at Buffalo, N. Y., who was granted a years leave of absence for study abroad, resumed his position October 1, 1912, having spent most of his time abroad in the clinics and laboratories of Berlin, Munich, and London. On December 15, 1912, he resigned to enter private practice in Buffalo, and to be Instructor in Neuropathology in the University of Buffalo.

EMERSON, DR. L. EUGENE, appointed Special Examiner in Psychopathology at Psychopathic Hospital at Boston, Mass., October 1, 1912.

EVARTS, DR. ARRAN B., Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician February 1, 1913.

EVERSOLE, DR. G. E., JR., appointed Assistant Physician at Psychopathic Hospital at Boston, Mass., Jan. 1, 1913.

FARRAR, DR. CLARENCE B., formerly Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., appointed Assistant Physician at New Jersey State Hospital at Trenton, March 1, 1913.

FAST, DR. W. S., appointed Superintendent of Nebraska State Institution for Feeble-Minded at Beatrice.

FITZSIMMONS, DR. T. C., appointed Superintendent of State Hospital for Criminal Insane at Fairview, Pa.

FORD, DR. WALTER A., appointed Interne at Kankakee State Hospital at Kankakee, Ill.

FOX, DR. HAROLD H., Medical Interne at Rochester State Hospital at Rochester, N. Y., resigned December 31, 1912, and appointed Assistant Physician at Gardner State Colony at Gardner, Mass.

FREED, DR. JOHN W., Assistant Physician at Western State Hospital at Staunton, Va., resigned.

FREEMAN, DR. G. H., Assistant Superintendent of St. Peter State Hospital at St. Peter, Minn., transferred to State Farm, Minn.

GLASCOCK, DR. ALFRED, Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician October 1, 1912.

GLUECK, DR. BERNARD, Senior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned November 30, 1912.

GOODFELLOW, DR. T. J., Assistant Physician at Warren State Hospital at Warren, Pa., appointed House Officer of Eye and Ear Service at New York Post-Graduate Hospital.

GREGG, DR. DONALD, appointed Assistant Physician to Out Patient Department at Psychopathic Hospital at Boston, Mass., January 1, 1913.

GROVE, DR. L. W., appointed Assistant Physician at Bryce Hospital at Tuscaloosa, Ala.

GUTTERY, DR. W. D., appointed First Assistant Physician at Nebraska State Hospital at Norfolk.

HAGGERTY, DR. JAMES E., appointed Junior Assistant Physician at Craig Colony at Sonyea, N. Y., February 1, 1913.

HALL, DR. ROSCOE W., Assistant Physician at City Detention Hospital at Baltimore, Md., appointed Assistant Physician at Phipps Psychiatric Clinic at Baltimore, Md.

HASSALL, DR. JAMES C., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., March 1, 1913.

HELM, DR. S. L., appointed First Assistant Physician at Eastern Kentucky State Lunatic Asylum at Lexington.

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HOLSHOLT, DR. A. W., formerly Assistant Physician at Stockton State Hospital at Stockton, Cal., appointed Superintendent of Napa State Hospital at Napa, Cal.

HOLLOWAY, DR. HOWARD S., appointed Pathologist at Florida Hospital for the Insane at Chattahoochee.

HOWELL, DR. WILLIAM L., appointed Medical Interne at Rochester State Hospital at Rochester, N. Y., February 10, 1913.

HUEY, DR. EDMUND BURKE, Assistant in Psychiatry at Phipps Psychiatric Clinic at Baltimore, Md., has been given leave of absence to recuperate his health in California.

HUGHES, DR. OLIVER F., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

JEFFRIES, DR. EDWARD FLEMING, Assistant Physician at Hospital for the Insane at Hamilton, Ontario, died October 17, 1912, aged 26, from typhoid fever.

JENKS, DR. FRANK H., formerly Assistant Superintendent of Elgin State Hospital at Elgin, Ill., died December 24, 1912, from ulcerative endocarditis, aged 49.

JONES, DR. KENNETH, Assistant Physician at City Detention Hospital at Baltimore, Md., resigned.

KEMPF, DR. EDWARD J., formerly Chief Physician at Central Indiana Hospital for the Insane at Indianapolis, appointed Assistant Physician at Phipps Psychiatric Clinic at Baltimore, Md.

KENNARD, DR. HENRY W., appointed Assistant Superintendent of Rosewood School for Feeble-Minded at Owings Mills, Md.

KEYSER, DR. TEDROW S., Assistant Physician at Bloomingdale Hospital at White Plains, N. Y., appointed Assistant Physician at Phipps Psychiatric Clinic at Baltimore, Md.

KING, DR. E. WARREN, Superintendent of Mendocino State Hospital at Talmage, Cal., resigned.

KING, DR. ROBERT, Senior Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., transferred to Buffalo State Hospital January 19, 1913.

KOCH, DR. J. VALENTINE, appointed Assistant Physician at Dayton State Hospital at Dayton, Ohio.

KONRAD, DR. CHARLES WILLIAM, appointed Interne at Psychopathic Hospital at Boston, Mass., September 1, 1912, and resigned November 1, 1912.

KROUT, DR. BOYD M., appointed Laboratory Interne at Psychopathic Hospital at Boston, Mass., February 1, 1913, and resigned March 26, 1913.

KUHLMANN, DR. HELENE J. C., Woman Physician at Buffalo State Hospital at Buffalo, N. Y., elected President of Women's State Medical Society of the State of New York.

KÜNSTLER, DR. MAX, appointed Junior Assistant Physician at Craig Colony at Sonyea, N. Y., November 15, 1912.

LADOVA, DR. ROSALIE M., Woman Physician at Northern Hospital for the Insane at Winnebago, Wis., resigned.

LAFORA, DR. GONZOLA R., Histopathologist at Government Hospital for the Insane at Washington, D. C., resigned August 31, 1912.

LA MOURE, DR. HOWARD, formerly Superintendent of State Institution for Feeble-Minded at Grafton, N. D., appointed Superintendent of Colorado State Insane Asylum at Pueblo.

LANDER, DR., appointed Assistant Physician at Mt. Pleasant State Hospital at Mt. Pleasant, Iowa.

LEAHY, DR. SYLVESTER R., Senior Assistant Physician at King's Park State Hospital at King's Park, N. Y., transferred to Manhattan State Hospital at Ward's Island, New York, January 1, 1913.

LEONARD, DR. JOHN WESLEY, formerly Assistant Physician at Dixmont State Hospital at Dixmont, Pa., died February 24, 1913, aged about 55.

LEVIN, DR. HYMAN L., Junior Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to be Assistant Physician April 1, 1913.

LIKE, DR. OTIS, appointed Assistant Physician at Kankakee State Hospital at Kankakee, Ill.

LIVINGSTON, DR. HENRY F., formerly Superintendent of South Dakota Hospital for the Insane at Yankton, died February 27, 1913, from heart disease, aged 69.

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LORD, DR. FRANK R., appointed Assistant Physician at Southern Indiana Hospital for the Insane at Evansville.

LUCAS, DR. W. P., appointed Chief of Out Patient Staff of Psychopathic Hospital at Boston, Mass., October 1, 1912.

MCCAFFERTY, DR. GEORGE W., Assistant Physician at Pennsylvania Hospital for the Insane at Philadelphia, appointed First Assistant Physician at State Hospital for the Criminal Insane at Fairview, Pa.

MCDONOUGH, DR. VINCENT A., Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., resigned February 13, 1913.

MCEWAN, DR. SAMUEL W., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned September 22, 1912.

MCKINNISS, DR. C. R., First Assistant Physician at Department for Men at State Hospital for the Insane at Norristown, Pa., promoted to be Chief Physician October, 1912.

MCNERNEY, DR. WILLIAM J., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, April 6, 1913.

MAISCH, DR. CHARLES O., appointed Assistant Physician at Psychopathic Hospital at Boston, Mass., March 11, 1913.

MALONEY, DR. THOMAS W., Medical Interne at Craig Colony at Sonyea, N. Y., resigned September 15, 1912, to enter private practice at Geneva, N. Y.

MAUL, DR., Pathologist at Nebraska State Hospital at Ingleside, resigned to accept a position at the University of Denver.

MAY, DR. HERMAN F., Assistant Physician at Hudson River State Hospital at Poughkeepsie, N. Y., transferred to Buffalo State Hospital at Buffalo, N. Y.

MILLER, DR. H. T., appointed Assistant Physician at Western State Hospital at Staunton, Va.

MILLER, DR. SIDNEY, Instructor in Clinical Medicine at Johns Hopkins Medical School, appointed Chief of Clinical Laboratory at Phipps Psychiatric Clinic at Baltimore, Md.

MILLIGAN, DR. JAMES A., Deputy Warden of State Prison at Michigan City, Ind., appointed Physician to Indiana Hospital for Insane Criminals in connection with the prison.

MILLS, DR. WILLIAM PORTER, appointed Superintendent of New Mexico Hospital for the Insane at Las Vegas.

MITCHELL, DR. THOMAS JEFFERSON, formerly Superintendent of Mississippi State Hospital at Jackson, died September 15, 1912, from senile debility, aged 82.

MONTGOMERY, DR. HORACE C., Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned December 13, 1912, to enter private practice at Henderson Harbor, N. Y.

MOORE, DR. ROY S., Medical Interne at Buffalo State Hospital at Buffalo, N. Y., resigned to enter private practice in Cicero, N. Y.

MORTON, DR. HARRY T., appointed Assistant Physician at Warren State Hospital at Warren, Pa.

MURPHY, DR. DENNIS J., Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to Junior Assistant Physician February 1, 1913.

MURPHY, DR. JOHN P. H., Junior Assistant Physician at Taunton State Hospital at Taunton, Mass., appointed Assistant Physician at Boston State Hospital at Boston, Mass., August 1, 1912, and resigned January 1, 1913.

MYERSON, DR. ABRAHAM, appointed Assistant Physician at Psychopathic Hospital at Boston, Mass., October 1, 1912.

NEWCOMB, DR. P. B., appointed Assistant Physician at Warren State Hospital at Warren, Pa.

OBERNDORFF, DR. CLARENCE B., Medical Interne at Manhattan State Hospital at Ward's Island, New York, resigned March 1, 1913.

OSBORNE, DR. A. E., Superintendent of Napa State Hospital at Napa, Cal., resigned.

PALMER, DR. H. L., Superintendent of Utica State Hospital at Utica, N. Y., is taking a trip abroad.

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PAYNE, DR. GEORGE C., Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., resigned December 31, 1912, to get general hospital experience.

PEARCE, DR. LOUISE, Interne at Johns Hopkins Hospital at Baltimore, Md., appointed Interne at Phipps Psychiatric Clinic at Baltimore, Md.

PEASE, DR. EDMUND M., appointed Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., December 29, 1912.

PEDDICORD, DR. F. L., appointed First Assistant Physician at Central Kentucky Asylum for the Insane at Lakeland.

PHELPS, DR. R. M., appointed Superintendent of St. Peter State Hospital at St. Peter, Minn., October 8, 1912.

POLLOCK, DR. J. K., formerly Assistant Superintendent at Southeastern Hospital for the Insane at Madison, Ind., appointed Assistant Physician at Peoria State Hospital at Peoria, Ill.

POSEY, DR. OLANDO, appointed Medical Interne at the Government Hospital for the Insane at Washington, D. C., December 2, 1912.

POWERS, DR. HERBERT W., Assistant Physician at Kenilworth Sanitarium at Kenilworth, Ill., appointed Assistant Physician at The Milwaukee Sanitarium at Wauwatosa, Wis., March 1, 1913.

PRATT, DR. E. C., appointed Assistant Physician at Kankakee State Hospital at Kankakee, Ill.

RAWLINGS, DR. EVA, appointed Pathologist at Kalamazoo State Hospital at Kalamazoo, Mich., December 3, 1912.

REA, DR. ROBERT H., appointed Acting Superintendent of Chicago State Hospital at Dunning, Ill.

REED, DR. HARRY, appointed Second Assistant Physician at Massillon State Hospital at Massillon, Ohio, March 1, 1913.

REID, DR. EVA C., Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned January 31, 1912.

RENDER, DR. W. E., Second Assistant Physician at Western Kentucky Hospital for the Insane at Hopkinsville, transferred to Eastern Kentucky Hospital for the Insane at Lexington.

RICHARDS, DR. CYRIL G., Assistant Physician at Bridgewater State Hospital at Bridgewater, Mass., appointed Assistant Physician at Boston State Hospital at Boston, Mass., May 1, 1912.

RICHARDS, DR. R. L., U. S. Army, appointed Superintendent of Mendocino State Hospital at Talmage, Cal.

RICHARDSON, DR. W. W., Chief Physician at Department for Men at State Hospital for the Insane at Norristown, Pa., resigned October, 1912, to open a private hospital near Pittsburgh.

ROBINSON, DR. ROY F., appointed Second Assistant Physician at Western Kentucky Asylum for the Insane at Hopkinsville.

ROWE, DR. MELVIN J., Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., resigned November 10, 1912.

RUNYON, DR. WILLIAM D., appointed Assistant Superintendent of Iowa State Sanitarium at Oakdale.

RUPP, DR. ROGER RALPH, appointed Interne at Psychopathic Hospital at Boston, Mass., January 3, 1913, to serve to July 1, 1913.

RUSSELL, DR. JOHN W., Superintendent of Matteawan State Hospital at Fishkill-on-Hudson, N. Y., resigned February 27, 1913.

RYERSON, DR. ESTHER, appointed Assistant Physician at Southern Indiana Hospital for the Insane at Evansville.

SANDY, DR. WILLIAM C., JR., Assistant Physician at New Jersey State Hospital at Trenton, resigned.

SCHROCK, DR. ROBERT D., Medical Interne at Binghampton State Hospital at Binghamton, N. Y., resigned January 1, 1913, and appointed Interne in the New York Hospital.

SEWARD, DR. WILLIAM H., Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., resigned December 31, 1912, to get general hospital experience.

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SHAW, DR. ARTHUR L., formerly Junior Assistant Physician at Craig Colony at Sonyea, N. Y., reinstated November 1, 1912, to work with the Resident Pathologist.

SHELLENBERGER, DR. EDWARD B., Assistant Physician at State Hospital for the Insane at Warren, Pa., resigned to enter private practice in Philadelphia.

SHERMAN, DR. MORRIS M., appointed Medical Interne at Manhattan State Hospital at Ward's Island, New York, November 1, 1912.

SIMCOE, DR. C. B., appointed Assistant Physician at State Hospital No. 3 at Nevada, Mo.

SMITH, DR. H. M., Superintendent of New Mexico Hospital for the Insane at Las Vegas, resigned.

SMYTHE, DR. M. H., appointed Assistant Physician at Stockton State Hospital at Stockton, Cal.

SOUTHARD, DR. ELMER E., appointed Director of Psychopathic Hospital at Boston, Mass., May 1, 1912.

SPENCER, DR. ELIZABETH C., Chief Physician at Department for Women at State Hospital for the Insane at Norristown, Pa., resigned March 1, 1913.

STEARNS, DR. A. WARREN, appointed Assistant Physician at Psychopathic Hospital at Boston, Mass., June 1, 1912, and promoted to be First Assistant Physician January 1, 1913.

STECKEL, DR. H. A., Third Assistant Physician at Mt. Pleasant State Hospital at Mt. Pleasant, Iowa, appointed Assistant Physician at Kings Park State Hospital at Kings Park, N. Y.

STEGER, DR. EDWARD M., appointed Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., March 3, 1913.

STOERZER, DR. CHARLES H., appointed Special Medical Attendant at Manhattan State Hospital at Ward's Island, New York, November 1, 1912.

SUMMERS, DR. W. B., appointed Assistant Physician at State Hospital No. 3 at Nevada, Mo.

SWIFT, DR. W. B., appointed in charge of Voice Clinic at Psychopathic Hospital at Boston, Mass., October 1, 1912.

TATJE, DR. ORAL E., First Assistant Physician at Massillon State Hospital at Massillon, Ohio, resigned to enter private practice March 1, 1913.

TAYLOR, DR. MELVIN J., appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., January 2, 1913.

THOMPSON, DR. CHARLES W., Assistant Physician at Upper Peninsula Hospital for the Insane at Newberry, Mich., appointed Assistant Physician at Woodcroft Sanitarium at Pueblo, Col.

THORNE, DR. JOHN H., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., resigned September 26, 1912.

TIBBETTS, DR. GUY D., appointed Interne at Psychopathic Hospital at Boston, Mass., July 1, 1912, and reappointed Junior Assistant Physician at Boston State Hospital at Boston, Mass., January 1, 1913.

TODD, DR. S. WALLACE, appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., January 2, 1913.

TOMLINSON, DR. H. A., Superintendent of Minnesota State Inebriate Hospital was given a complimentary banquet by the citizens of St. Peter, October 7, 1912.

TONER, DR. JOHN EDMUND, formerly Assistant Physician at Government Hospital for the Insane at Washington, D. C., died October 30, 1912, aged 52.

TORNEY, DR. GEORGE H., First Assistant Physician at Utica State Hospital at Utica, N. Y., resigned January 15, 1913, to become Assistant to Dr. H. R. Stedman at Bournewood.

TRUITT, DR. RALPH P., Physician-in-Chief at City Detention Hospital at Baltimore, Md., appointed Assistant Physician at Phipps Psychiatric Clinic at Baltimore, Md.

Tutt, Dr. W. R., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

Vosburgh, Dr. Stephen E., First Assistant Physician at Boston State Hospital at Boston, Mass., and later Executive Assistant at Psychopathic Hospital, appointed First Assistant Physician at Maine Insane Hospital at Augusta, Me., December 1, 1912.

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WATERS, DR. P. S., appointed Assistant Physician at Anna State Hospital at Anna, Ill.

WATSON, DR. WILLIAM HENRY, one of the Founders of Middletown State Homeopathic Hospital at Middletown, N. Y., died January 1, 1913, from nephritis, aged 83.

WEEKS, DR. P. H., appointed Assistant Physician at Central Indiana Hospital for the Insane at Indianapolis.

WILBOR, DR. LEON M., Medical Interne at Rochester State Hospital at Rochester, N. Y., resigned October 1, 1912.

WILGUS, DR. SIDNEY, Superintendent of Kankakee State Hospital at Kankakee, Ill., resigned, and will conduct the Ransom Sanitarium at Rockford, Ill.

WILLEY, DR. GORDON F., appointed Assistant Physician at Kalamazoo State Hospital at Kalamazoo, Mich., December 17, 1912.

WITTMAN, DR. A. G., appointed Assistant Physician at Elgin State Hospital at Elgin, Ill.

WOOLSEY, DR. C. L., appointed Assistant Physician at State Hospital No. 2 at St. Joseph, Mo.

YERKES, PROFESSOR R. O., appointed Psychologist to Out Patient Department of Psychopathic Hospital at Boston, Mass., March 13, 1913.

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AMERICAN
JOURNAL OF INSANITY

INTRODUCTION.

The following pages mean to be a lasting record of the spoken words which formed an intrinsic part of the celebration of the opening of the Henry Phipps Psychiatric Clinic of Johns Hopkins Hospital, Baltimore, Md. For the first time in English-speaking countries a university and a large general hospital serving a medical school received as a not merely affiliated but an intrinsic part of its facilities a well-equipped hospital to take care of patients with mental disorders. For the first time a university and a general hospital and its medical school were able to bring to fruition the dream of a great philanthropist and of many workers, a dream, to use the words of Mr. Phipps, that has had for its object the ameliorative treatment of the insane. While Michigan and Massachusetts had created similar opportunities of work, the generous gift of Mr. Phipps put within the reach of Johns Hopkins University and Johns Hopkins Hospital a unique opportunity the inauguration of which deserved an unusual celebration.

Mr. Phipps made it possible to give the American workers in psychiatry an opportunity to meet a number of European leaders of psychiatry, and to arrange for a series of lectures and demonstrations depicting the present status of psychiatry. Those responsible for the arrangements were fortunate in obtaining for the semi-public opening ceremony the cooperation of the men who had had most to do with making possible this new great step, Sir William Osler, who in his farewell address on leaving Johns Hopkins University, had sketched the need of the university and medical school and the hospital in the direction of psychiatry and the care of patients with mental disorders; Dr. Stewart Paton, who in the later nineties and the early years of the 20th century has done

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so much to interest the men at Johns Hopkins in psychiatry and in the German clinics, and Dr. William H. Welch, who had suggested this specific need to the inquiring mind of Mr. Phipps, and Judge Henry D. Harlan, the President of the Board of Trustees of The Johns Hopkins Hospital. A gathering of over one thousand persons representing the medical profession, the university, and the friends of the hospital and university listened to the invocation of the Rev. Rufus M. Jones, of Haverford College, Pa., and the brief historical sketch of the inception of the clinic by Dr. William H. Welch, and an excellent statement of the meaning of the clinic by Dr. Stewart Paton, the words of appreciation of Judge Henry D. Harlan, the few but heartfelt remarks of Mr. Phipps, and the fascinating address by Sir William Osler. In the evening of the first day the citizens of Baltimore extended a dinner to Mr. Henry Phipps and to the guests of the celebration. For the strictly scientific part of the program each participant had been invited to choose as far as possible a specific topic in the center of his research interests with a brief statement of the methods and results, and a discussion of the relation which it seemed to have to his conception of the further development of psychiatry. It was thought best to go in medias res with some concrete problem and to show the relations to the wider program of work for which we all were accustomed to look to the special worker as his characteristic field, and also to the wider fields of psychiatry as each investigator sees it. It is with deep gratitude that we present here the contributions of the guests who honored us with their presence.

May this commemoration volume be not only an expression of the present status of psychiatry, or at least of some of its leading movements, but a lasting stimulus towards concrete work and towards untiring efforts to reach the aims of the donor of the great opportunities.

ADOLF MEYER.

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A WORD OF APPRECIATION.*

By HENRY D. HARLAN,
President Trustees, The Johns Hopkins Hospital.

We are standing at the threshold of a new era for the Johns Hopkins Hospital and the Johns Hopkins University. However glorious the past has been, we look for the coming era to be one of wider influence and larger progress. We have met to receive from its donor, to open and dedicate to the service of humanity, a great building designed by its gifted architect, to translate into bricks and mortar, wood and stone, marble and steel, the most modern scientific theory of the environment in which those afflicted with mental ills should receive care, planned with the most assiduous attention to detail, provided with every facility, every appliance, every device that human forethought and present knowledge can suggest, thoroughly furnished and completely equipped, and in which no reasonable expense has been spared, to provide the means and the opportunity for the advanced study and treatment of mental disorders and for the higher education and training of medical men, students and nurses, in this most important specialty.

This Clinic, intended, in the words of its founder, for "the better care of patients suffering from mental diseases, especially in the earlier and often curable stage, under conditions similar to those of a general hospital"—with accommodations for an hundred patients, and for a medical staff sufficient to study all cases presented, with its large laboratories for psychology, neuropathology and clinical microscopy as aids to investigation, with its capacity for teaching, with its dispensary or out-patient department for the thorough study of incipient cases in their homes and supervision of home conditions, with its provision for an ample social service to give after-care and skilled supervision of discharged patients, with its unusual facilities for the systematic classification of patients, and for the treatment of acute mental trouble by hydrotherapy, mechanotherapy and continuous baths,

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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with its careful arrangements for recreations, occupations, amusements, industries and music for convalescents—this splendid and costly edifice—with all that it is, with all that it represents, with all that it contains, and with a fund to maintain it during a period of years sufficient to demonstrate its value, is the gift of one modest, thoughtful, generous, sympathetic, far-seeing man, Mr. Henry Phipps of New York.

It is a magnificent gift, magnificent in its conception, magnificent in its size and magnificent in its potentiality for good. It is a gift to the Johns Hopkins Hospital, but it is accompanied by a gift to the Johns Hopkins University, for, coupled with the gift of the psychiatric clinic to the hospital, there is a gift of a professorship of psychiatry to the Johns Hopkins University.

Mr. Phipps shall tell you in his own words why he made these donations. In a letter to the trustees, under date of July 14, 1908, he wrote: "In the short period of its existence—not yet twenty years—the Johns Hopkins Hospital has influenced profoundly every department of the medical profession, and has introduced new standards and new ideals.

It is a tribute to these and to the men who have carried them out that I establish this new foundation, in the strong hope that in it work of the same high character for the country at large may be done." . . . .

These words are worthy of preservation among our most priceless possessions as long as we continue to deserve them.

That Mr. Phipps, a citizen of another state, should have made these Maryland foundations the recipients of such bounty and selected them as instrumentalities through which the beneficent plan that had found a lodgement in his mind for the good of mankind, should be wrought out, fills us all with the most profound appreciation and the warmest gratitude. No higher tribute could have been paid to the character of the work which has been accomplished here by those who have engaged in the search for truth, in the advancement of knowledge and the spread of learning, and no greater stimulus or encouragement could have been afforded to the workers in every department of our hospital and university.

Our gratitude, deep as it is, is not a mere personal sentiment. It is the gratitude of those who recognize, both the significance of

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this gift, and the obligation it imposes. A new field of research and endeavor, promising results of supreme importance, has been opened to our staff and students. A great opportunity is present. The problem of administering this great clinic, of directing its activities, of making it accomplish the objects for which it was designed, is before us. We do not minimize the responsibility of undertaking it, but believing as we must, that the noble impulse which was born in the heart of Mr. Phipps, and has found such expression, was divinely inspired and will be divinely blessed, we enter upon it with resolute purpose, and we confidently hope, that with the aid of the distinguished director who has been chosen and his accomplished assistants, and the cooperation and help of a medical board that has never failed us, there may here be achieved all and more than, even you, sir, have anticipated, so that not only may many who enter these walls, facing the darkness and gloom of blighted lives, leave them with hope revived, reason restored and happiness renewed, but also that what is done and taught and learned here, may so advance the science of psychiatry, that countless others everywhere may be blessed and benefitted.

Mr. Phipps we accept the great building, which you have turned over to us to-day. We cannot thank you sufficiently for the confidence you have reposed in us, but we are deeply sensible of it and of your liberality, and we trust sir, that your life may be prolonged many years, during which you may enjoy the rare felicity of beholding some of the benefits to humanity that are to flow from your generosity.

The name of Henry Phipps will have a high place among the benefactors of Baltimore, and like that of Johns Hopkins will be remembered with gratitude by unnumbered generations after most of ours are long forgotten.

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THE PSYCHIATRIC CLINIC AND THE COMMUNITY.*

By STEWART PATON, M. D.,

Lecturer on Biology at Princeton University,

Director of the Mental Hygiene Exhibit of the National Committee for Mental Hygiene.

The increasing interest shown in the study of human activities is one of the most significant and hopeful signs of our times. Momentous as was the impulse given to science by Copernicus, Galileo and Newton one result of their investigations was to direct attention to a universe in which human beings were considered to be merely passive observers of natural phenomena. So absorbed did man become in formulating hypotheses to explain a theoretical universe of which he did not form a part, and in delving into the records of his own past history, he neglected the study of present activities. At last the course of events warned him that the lessons of remembrance or the hypertrophied historical sense had become "a malady from which men suffer."

The dedication of a psychiatric clinic is an event of more than ordinary importance to a community, as it marks the awakening of intelligent interest in man, as an active thinking being. Having striven for centuries to improve the methods for recording his fanaticisms, superstitions, sins of omission and of commission, and failures to adjust life to meet new conditions, he has begun at last to take rational measures to improve his lot, and to acquaint himself with the laws on which the social organism rests. As the value of this benefaction to the community will depend directly upon the intelligent use of resources and energy made available for rendering more effective service to humanity, may we not profitably devote a few moments in attempting to formulate some of the problems to the solution of which this clinic is dedicated. Errors in judgment committed now, in estimating the scope and the character of the investigations to be carried on in this building, might defeat the efforts of those upon whom the

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responsibility of equalizing opportunity and achievement must fall.

This clinic, in a peculiarly distinctive manner, typifies the human as well as the humane spirit of the twentieth century. During the seventeenth and eighteenth centuries the physical sciences had succeeded in breaking away from the traditions and superstitions which had hampered their development. Astronomy had been divorced from astrology, chemistry from alchemy, and the foundations of geology had actually been laid. In the nineteenth century the renaissance of the biological sciences was accompanied by the formulation and expression of a rational idea of man's position in cosmos. Towards the close of the eighteenth and the beginning of the nineteenth century a few investigators had already called attention to the importance of studying the activities of human beings; but not until the second half of the last century was there any realization of the fact that the most interesting phenomena of the universe for human beings to study were their own activities. How do we live, move and have our being?

To the lay mind the term psychiatry often suggests a very limited field in medical science, but those who take an active part in the work of this clinic will easily appreciate that they are engaged in attempting to find the solution of problems of far greater importance than any relating merely to the care of patients suffering from mental and nervous disorder. Anomalies of thought and conduct are studied in order that the knowledge acquired may be applied directly to making life for the majority of persons pleasanter and more effective. Institutions of this character are intended primarily for the study of human nature along broad biological lines.

We are justified in considering disease as an analytical process which reduces to a comprehensive form the complex activities we designate collectively as health. An intimate knowledge of abnormal states of mind and body is, as Pinel affirmed, a key that unlocks the secrets of human history. By making use of nature's contrast of functions we may also gain an insight into that continuous process of adjustment we call life. From the study of disease the facts have been gathered for the foundations upon which modern preventive medicine has been established, and

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through it a new meaning has been given to life and greater efficiency in thought and action to those who profit by the lessons of science. For centuries the different parts of the body have been studied by physicians, and a knowledge of the structure and function of the separate parts has been attained. It is essential, if we are to comprehend the fundamental mechanisms of response of the organism, that we familiarize ourselves with the laws which govern the relationship of all these organs as they are expressed in each individual, and we must accustom ourselves to study man as a living organism.

Living beings have the capacity of expressing their integral unity as individuals, and in the case of man there are special mechanisms of adjustment, collectively designated as the personality. The complex adjustments synthesized in the personality may easily be deranged by interference with the activities of organs or by disturbing the capacity for adaptation; the chief function of sense organs, brain and nervous system. We all know how intimately dependent human beings are upon their environment. Changes in the latter call for delicate and immediate adaptation, and it may be said the problems of psychiatry relate to the determination of the causes which give rise to imperfect adjustments.

A great blessing was conferred by science upon humanity when the problems of psychiatry were restated in biological terms. Life was recognized as a process of adjustment, relatively perfect in health and imperfect in disease; while that metaphysical term insanity arbitrarily reserved to designate certain forms of unsuccessful adjustment was cast into the rubbish-heap together with the chains, straight-jackets and hand-cuffs which had long tortured the lives of patients. Out of hazy mystical conceptions entertained in regard to the nature and genesis of activities described as thought and conduct sprang new ideas potent to inspire the minds of investigators, capable not only of bringing about great practical reforms in the care of the insane, but also in improving the methods for attacking the problems relating to human thought and conduct.

As the ultimate success of the work to be carried on in this clinic, more than in any other department of the hospital, will depend upon cooperative endeavor, I may be permitted to em-

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phasize what seems to me to be an important factor in organization and administration. The patients presenting themselves for treatment are subjects of imperfect adjustments in the life process. The time during which they remain under observation in these wards will represent relatively brief epochs of life, and the records of cases will often give but cursory glimpses into the genesis, duration and progress of imperfect life adaptations. In order to serve the high purpose for which it is planned and dedicated this clinic should be regarded as an important link in a chain of agencies, home, school, college, other hospitals and institutions; in fact the entire social organization with which it is essential constant sympathetic contact should be maintained. Only by the establishment of these relationships can progress in the study of life processes be made.

May we express the hope that in attempting to estimate the value of the work accomplished in this clinic the public expression of opinion should be tempered by charity and patience. Although the field of investigation, which includes the consideration of the factors determining human thought and conduct, is the most interesting one in modern medicine, let us not forget that it is the last one to be thrown open to investigators.

The methods of investigation necessarily employed will not appeal to the imagination of the public. The inspiration essential to solve the problems of modern psychiatry will probably not flash into consciousness as did the visions that guided the observer watching the lamps swing in the cathedral or the apple fall from the tree, but it will come gradually only after patient quiet effort, similar to that which finally rewarded the author of "The Origin of Species," and gave a new meaning to life. The realization of the ideals to which we do homage to-day will mark the time when, in Goethe's words,

> Vernunft fängt wieder an zu sprechen,
> Und Hoffnung wieder an zu blühn.

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SPECIALISM IN THE GENERAL HOSPITAL.*

By SIR WILLIAM OSLER, Bart.,
Regius Professor of Medicine, Oxford; Honorary Professor of Medicine, The Johns Hopkins University.

It is not easy to put in words my appreciation of the honor of delivering one of the formal addresses at the opening of this institute or to express my gratification at the inauguration of this new development in the Johns Hopkins Medical School. The pleasure is heightened by the thought that the generosity of an old and valued friend has made to-day possible. This hospital has already experienced the wise liberality of Mr. Henry Phipps, one of whose tuberculosis foundations, under its management, ranks as a model of its kind.

That, after nearly a quarter of a century, all those professionally concerned in the early working of the hospital are here to take part in this ceremony, is, for us at least, a happy circumstance. One man I should like to have seen with us, Francis T. King, the first president of the hospital, whose devotion to its interest and whose faith in its future were the stay and support of his declining years. Three of those closely connected with the early organization have passed away. Dr. John S. Billings was, from the first, the adviser of the board of trustees, the real designer of the hospital, and the friend to whom we all turned for advice. I know with what satisfaction he looked back on this part of a life great in achievements for the public and the profession.

No one of all that fine band of men with whom we were associated, Judge Dobbin, Judge Gwinn, Mr. Francis White, Mr. Lewis Hopkins, Mr. W. T. Dixon, Mr. G. W. Corner, Dr. Cary Thomas, Dr. Alan Smith, Judge Brown, Mr. James Cary, Mr. Joseph Elliott, Mr. C. Morton Stewart, would have appreciated to-day more keenly than Daniel C. Gilman, whose work in connection with the opening of the hospital must never be forgotten. He was a man with rare vision and one also who could drive the

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straight furrow, as the people of this state—of the country at large —well know. And how Isabel Hampton would have rejoiced to see this day—with its great opportunity to develop the special work so dear to her heart. How full of gratitude must be our first director, Dr. Hurd, to see the fruition of many years of strenuous, hopeful toil!

In 1889 this institution seemed to many the last word in hospital construction, and those of us who were fortunate enough to take charge of the departments felt that here was something to be lived up to, something in which our dreams could be realized. Only when in working order did we feel its incompleteness. We had no medical school, a big gap quickly filled by the generosity of Miss Garrett and her friends. Year by year saw new departments added, new lecture rooms, operating rooms, laboratories, additions to the out-patient departments, to the Nurses' Home, and, by Mr. Marburg to the private wards; and hand in hand, an internal growth in efficiency, and an ever-widening sphere of influence, educational and philanthropic. Our ambition was to do for medicine what Mr. Gilman and his faculties of the university were doing in art and science, and at a pace hard to follow. The race was not an easy one, but fortunately there were close bonds between the two training stables, and we had the advantage of the prestige of their 13 years of brilliant success.

Only a few impressions of life endure. We use the same cylinders over and over again, the dots and markings become confused, and when we call for a record, a jumbled medley is poured out, a confused message from the past. But certain records are time-fast, and bite in such a way that no subsequent impressions can blur the clearness, and the story comes out fresh and sharp. So it is when I call up those early years so full of happiness, so full of hope. And to have seen in so many ways the fulfillment of our heart's desire is more than we could have expected, more indeed than we deserved.

I am sorry for you young men of this generation. You will do great things, you will have great victories, and, standing on our shoulders you will see far, but you can never have our sensations. To have lived through a revolution, to have seen a new birth of science, a new dispensation of health, reorganized medical schools, remodeled hospitals, a new outlook for humanity, is not given to every generation.

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By temperament a dreamer, wherever I have worked, visions of the future have beset me, sometimes to my comfort, more often to my despair. In desolate days I have wandered with Don Quixote, tilting at windmills; in happier ones I have had the rare good fortune to dream dreams through the gate of horn, and to see their realization, to have both the vision from Pisgah and the crossing the Jordan. I have seen the school in which I began in Toronto, in an old building, dirty beyond belief, transformed into one of the most flourishing on the continent, a staff of seven teachers increased sevenfold; my alma mater, McGill, prosperous even then in men of mettle, but housed in wretched quarters, now in palatial buildings, and in affiliation with two of the best equipped of modern hospitals. How paltry were my aspirations of those days! How insignificant do they seem. My feelings when Sir Donald Smith, now Lord Strathcona, gave us the first endowment of $50,000, could not be stirred to the same intensity to-day by less than a million! Nearly 30 years have passed since I joined the University of Pennsylvania, the premier school of the country. There were new buildings, and a new hospital grouped about a single arts building. But what a transformation since! Whole squares of West Philadelphia annexed and covered with laboratories, dormitories and lecture halls and largely due to the magic energy of a prince of dreamers, William Pepper.

It has been my lot to see others do what I should have liked to do myself, and to feel that it has been better done! Looking back over a somewhat vagrant career, my fission from an academic body has always been a stimulus, and has invariably quickened the pace of progress. And this thought was a consolation when I left this comfortable billet, a few years ago. Among the scanty seeds scattered in my peaceful valedictory only those in which I ventured into the dangerous region of prophecy appear to have fallen on good ground.

I spoke of the needs of special departments—hoping that within 25 years we should have a psychiatric institute, a children's hospital, a genito-urinary clinic and a special building for diseases of the eye, ear and throat. Two of these are already accomplished facts—the Harriet Lane Johnston Children's Department has been opened; to-day we open the Phipps Psychiatric Institute, and for the new genito-urinary clinic, that money has been fur-

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nished through the liberality of Mr. James Buchanan Brady. Others will follow rapidly, and it is safe to say that within a dozen years there will be as many special departments, semi-independent units in a great organization. The occasion seems fitted for the expression of a few thoughts on specialism in the general hospital.

The work of the units is identical; each a place where rich and poor receive the best skilled help that the profession can command; each a place where students are taught; each a center of study and research. Let us consider briefly these three functions. Similar in diversity, each unit in organization, in aims, and in methods, is a replica of the other. Each represents a technical school linked to the university by the medical faculty of which, by Mr. Hopkins' will, this hospital was to form a part. They differ from the more purely scientific departments of the medical school in one important particular. The hospital units mint, for current use in the community, the gold wrought by the miners of science. This is their first function.

A mother to-day brings her child to Dr. Harry Thomas, at the neurological department, a poor dwarfed, idiotic creature, but all the same very dear to her heart. It is a far cry from the little laboratory where Schiff made his immortal experiments, and literally thousands of workers in the mines of science have slaved years to find the pure gold, handed out freely from this hospital to that poor woman, with which salvation was wrought for her poor child. It seems so easy now. "Ah, a cretin. How interesting! How old do you say? Eight? Why, she looks three. All right, do not worry, the child will get well quick; get these powders. Yes, three times a day!"

An anxious mother, whose son goes to Manila next week, brings him to Dr. Barker in the private ward for an anti-typhoid inoculation. Again a far cry from Zurich, where Klebs—so often a pioneer—first saw the typhoid bacillus. Again, a host of miners and a vast store of gold—golden knowledge, with which, would they but use it, people of the country could redeem from certain death thousands of their sons and daughters.

The two incidents I have mentioned illustrate what is going on in every unit of a hospital to-day. Take another—that street brawl last night. "Yes, he was shot through the abdomen." "A dozen wounds in the bowels, you say? Hum! What a job! Must have

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taken you a long time—doing well, of course." "Oh, yes, we got him early—they all do well now!" Who would have believed such a story in my student days? Again, the pure gold dug out by the elder Gross, Lister, Halsted and thousands of miners, minted in the laboratories and handed out, Mr. President, to the public last night by your surgeons.

We sit over the fire in the evening and pile on the coal without a thought of the dark and dangerous lives of the poor miners who risk so much for so little. It distresses my soul to think that we have done so little for the miners of science, and it does not lessen my distress to know that very often they do not give a thought to us. That coal put on the grate last evening—do you think the Hungarian in West Virginia thought how comfortable you would be over the fire? No! Nor did Schiff realize that his work would be utilized to brighten the hopes of thousands of mothers or that he was following a lode richer for humanity than the Golden Fleece. Only a cold-hearted, apathetic, phlegmatic, batrachian, white-livered generation, with blood congealed in the cold storage of commercialism, could not recognize the enormous debt which we owe to these self-sacrificing miners of science; and yet there are to-day sons of Belial, brothers of Schimei, daughters of Jezebel, direct descendants of the Scribes, Pharisees and hypocrites in the time of Christ, who malign these prophets and wise men, winners in a fight for humanity unparalleled in the annals of the race.

The perfect physical form in man or woman is much more sought than found. The perfect mental form is even more rare. The best to hope for in the average man, from nature and nurture, is to have a right judgment in all things. In how few of us is this consummation reached! One philosopher made the comforting remark that "Every man has a sane spot somewhere." Burton, in hs survey of humanity in the famous *Anatomy of Melancholy*, concludes that the whole world is mad, and needs a journey to Anticyra (where the best hellebore, a specific against madness, was grown).

There should be, Mr. President, no lack of candidates for help from the unit we open to-day. Many a man goes to his physician now for an overhauling of his machinery. I found a big West Virginian in the private ward one morning. The history was colorless. I went over him thoroughly. "There is nothing the

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matter with you," I said. "I did not say there was," came the reply, "that is what I wanted to know."

We are all a bit sensitive on the subject of our mental health, but a yearly stocktaking of psychic and moral states, under the skilled supervision of Professor Meyer, would be most helpful to most of us.

Mr. J. A. A tendency to irritability of temper.

Mrs. R. Too much given to introspection.

Miss B. Over-anxious about her soul.

Master G. Worried by a neurasthenic mother.

These would be some of the headings in the diagnosis slips. But the Institute will have enough to do—meeting a demand for the early treatment of borderland and acute cases.

The progress in the rational treatment of insanity is a bright chapter in the history of the past century. The story recently told by Dr. Hurd, of the changes in this country within forty years, is full of encouragement. The larger staff, the skilled assistants, the scientific study of the cases has become a rule and this community has had the benefit of the up-to-date methods of the Sheppard-Pratt Hospital, and has seen with pride the rapid development of the work of the state institutions. New methods of treatment will be tested, every advance in technique controlled, and to new theories will be applied the touchstone of science. A wide diffusion of its benefits should take place through the nurses who will pass through the institute. The discreet, even-balanced, thoroughly-trained mental nurse will be a great boon in general practice, and she will have a sociological value amid the widespread activities that have been aroused in connection with mental hygiene.

That the medical student is an essential factor in the life of a great general hospital, has been of slow recognition in this country. Admitted to the dispensaries, welcomed in the amphitheater, he has been, until recently, rigidly excluded from the wards, except as a casual attendant on ward classes. I am glad to say that from the day he leaves the medical school laboratories, he is in this hospital a co-worker with doctors and nurses, in every one of its activities, and as his right, not as a privilege grudgingly granted by the trustees.

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And so it should be in all general hospitals. Every unit must be so organized as to make him fit in as part of its machinery. It is his business to know disease, and for the sake of the public, every possible opportunity should be given to him. I would even throw open the private wards, that the clinical clerks and surgical dressers might see the vagaries of sick life in all classes of society. In the palmy days of Rome, the physician was followed to the houses of the wealthy by his pupils—a practice we could emulate in our private wards—limiting, of course, the numbers, and selecting the cases.

But with the medical student there is a real difficulty, expressed 25 centuries ago by the Father of Medicine, in the famous aphorism "Life is short; the art is long." The stay of the medical student in the hospital is so brief, the amount to be learned so vast, that we can only hope to give him two things—method (technique) and such elementary knowledge as how to examine patients, the life history of a few great diseases and the great principles of surgical practice. He cannot be expected in the short period of the curriculum to go the circle of the units, spending time enough in each to master the chief details of a dozen specialties.

In most schools, a system of elective studies has been arranged to meet this really pressing and serious condition, which has grown in acuteness with the multiplication of the specialties. How can an institute like this touch the medical curriculum? At many points, directly and indirectly. The very existence in a general hospital indicates the recognition of psychiatry as part of its legitimate work. One of the tragedies of the subject has been a dissociation from centers of active professional and university life. A department of medicine, with the closest affiliation with the life of the community, has been segregated and stamped with a taboo of a peculiarly offensive character. Here it will take its proper place—a unit in the work of the medical school of a university.

This, in itself, will be a lesson to the student. A new atmosphere will be diffused, a new group of energies and activities will come into the hospital, which cannot but be helpful. The director, his staff, and the nurses will play a new rôle, which will greatly enhance the reputation of the old company. Living as he does in such close fellowship with the staff of the hospital, the medical

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student will be influenced in this way by the very presence of the institute.

It is to be hoped too, time may be found for general instruction of the senior class in the elements of neuro-psychology, and with the elective system, an active group of students be found to whom this study will appeal strongly. But after all as practical men, we have to face the Hippocratic aphorism—the art is getting longer and longer, the brain of the medical student, not getting bigger and bigger, has its limits; and though keener and more industrious than ever in history, the time is too short for a man already burdened to the breaking point, to study any specialty from the standpoint of the specialist.

To a large outside body, this institute should cater with extraordinary benefit. There must be a thousand or more assistants in the asylums of the country, whose pineal glands are not yet crystalized, and who should find here inspiration and help. Amid isolated and depressing surroundings, these men do yeomen work in the profession. From the director and his staff, they will receive that warm and encouraging sympathy, the very leaven of life, a quality which has been the inspiration of the benefactions of the founder of this institute. And I hope room and plenty of it will be found for the general practitioner, through whom more than any other group, the benefits of this institute may be distributed. He needs enlightenment, instruction and encouragement—enlightenment as to the vast importance of early deviations from normal mental states, instruction in new methods of diagnosis, and treatment and encouragement to feel that in the great fight for sanity in the community he is the man behind the guns.

A larger outlook is connected with the third function of a hospital unit. The old Greek, with his quick sense of helpfulness, always asked about a work: "Does it make life a better thing?" and Prof. Gilbert Murray remarks that one who wished to give the greatest praise to the Athenians said, "They strove to make gentle the life of the world." The American, the modern Greek—mentally if not orally—always asks the same practical questions; sometimes, in the case of pure science, when it is both foolish and fruitless. But he may ask legitimately how such an institute as this may be helpful in studying lapses and freaks of the human mind—I cannot give the answer. "It is not in the book I learned

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out of" as the children say. I could tell you in internal medicine, and could refer you to the long list of studies in dysentery, malaria, typhoid fever, pneumonia, heart diseases and blood diseases that have come from the medical unit. But a psychopathic unit is a novelty in a general hospital, designed for the study as well as for the cure of mental aberrations.

We talk a great deal about the human mind, and, when cornered, quote Hamlet to cover an unpleasant ignorance of its true nature. The modern student, like the ancient, takes his stand either with Plato and compares the mind and brain to a player with his musical instrument, or with Lucretius to a musical box wound up for so many years to play so many tunes. Authorities lean to one or other of these views, and I have a shrewd suspicion that some of our distinguished visitors, great representatives in this specialty, do not see eye to eye in this matter. Three things we do know, departures from normal states are extraordinarily common—they are the most distressing of all human ills—they should be studied systematically by experts, with a view to their prevention and cure.

When Dean Swift left the little wealth he had to found a house for fools and mad, he could not forego the pleasure of adding the satiric touch: "No nation needed it so much." This idea was not, I am sure, in the large heart of Mr. Phipps; but a wide-spread feeling has arisen in this country that the hygiene of the mind is just as important as the hygiene of the body—that we must return to the Greek ideal of the fair mind in the fair body. How beautifully Plato visualizes the day (in a passage I am never tired of quoting)—"When our youth will dwell in a land of health amid fair sights and sounds and receive good in everything; and beauty, the effluence of fair works, shall flow into the eye and ear like a health-giving breeze from a purer region, and insensibly draw the soul from earliest years into likeness and sympathy with the beauty of reason." (Republic, Bk. II.)

What a revelation of an awakening in the community that it was possible to organize such a Congress of Mental Hygiene as was held here a few months ago under the auspices of the Medical-Chirurgical Faculty! The program itself was an inspiration. In this country, to recognize a wide-spread need is to meet it; and such gatherings held under auspices of the National Com-

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mittee will go far to lessen the sad prevalence of early nervous breakdown.

What a philosopher said of the Melissians may be said of many people—they are not fools, but they do just the things that fools do, in the matter of training the young. Unfortunately, we cannot pick our parents, and still, as of old, our hearts give our hands, regardless of our heads. Dr. Mott will tell a tragic tale of heredity in relation to insanity. I am afraid several generations must pass before we see any practical results of the present active eugenic crusade, but there is an immense and hopeful work to be done in educating parents in training-stable methods. An Ethiopian cannot change his skin, but a queen bee results from a change of diet. This institute, I am sure, will play its part in this national campaign of prevention of mental ill health through education—a campaign as important to the public, and just as worthy of support as the great struggles against tuberculosis and infant mortality.

It will be helpful too, to study in a sane, sober and sympathetic way, epidemics of mental, moral and even economic folly as they sweep over the country. The present opportunity should not be missed. With causes just as definite as small-pox or yellow-fever, they never occur under exactly the same conditions, but all have their basis in, and are mere specks upon, that fine old humanity that is ever fighting its way towards the light.

The present out-break has not been equaled since the capture of the Roman world by Oriental cults. The same old-fashioned credulity exists that enabled Mithras and Isis, Apolonius and Alexander to flourish then as the new cults do to-day—and for the same good reason. There is still potency in the protoplasm out of which arose in primitive man, magic, religion and medicine. Circe and Æsculapius were probably twins! Historically our fringe of civilization is of yesterday, if we compare the six or seven thousand years of its record with the millions which must have passed since man assumed his present form on the earth. In this vast perspective Aristotle and Darwin are fellow-students; Hippocrates and Virchow are contemporaries.

Primitive views still prevail everywhere of man's relation to the world and to the uncharted region about him. So recent is the control of the forces of nature that even in the most civilized countries man has not yet adjusted himself to the new conditions,

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and stands, only half awake, rubbing his eyes, outside of Eden. Still in the thaumaturgic state of mental development, ninety-nine per cent of our fellow creatures, when in trouble, sorrow or sickness, trust to charms, incantations and to the saints. Many a shrine has more followers than Pasteur; many a saint more believers than Lister. Less than 20 years have passed since the last witch was burned in the British Isles!

Mentally the race is still in leading strings, and it has only been in the last brief epoch of its history that Esop and Lewis Carroll have spun yarns for its delight, and Lucian and Voltaire have chastised its follies. In the childhood of the world we cannot expect people yet to put away childish things. These, Mr. President, are some of the hopes which fill our hearts as we think of the future of this new department.

One word of appeal to the units. Members of a corporate body, successful life will depend upon the permeation by harmonics which correlate and control the functions. Isolation means organic inadequacy—each must work in sympathy and in union with the other and all for the benefit of the community—all toward what Bacon calls the lawful goal of the sciences, that human life be endowed with new discoveries and power.

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THE PURPOSE OF THE PSYCHIATRIC CLINIC.

By DR. ADOLF MEYER.

I deem it a great privilege to state before this representative gathering just what the Psychiatric Clinic stands for, and what is made possible through the munificence of Mr. Phipps. Mr. Phipps has repeatedly and in a most practical way given expression to his far-sighted conviction that active investigation should be bestowed on the family scourges of tuberculosis and insanity, instead of accepting them fatalistically. The new clinic I trust will make it easy for us to make a practical demonstration of the wisdom of this big-hearted practical philosopher.

The existing hospitals or asylums for mental disorders have of necessity been too exclusively limited to the care of more or less extreme cases. A declaration of outspoken "insanity" with all its arbitrary implications was long required even for admission, and this barred out many and unhappily stigmatized those who entered. To be sure, even in asylum-care, wonderful strides have been made during the last 25 years, as has been shown in the recent Mental Hygiene Exhibit in this and other cities. In the face of great odds of overcrowding and undermanning and forced economy, they are playing a more and more active and helpful rôle in the community. But now the time and conditions have become ripe for intensive research and for an effective fight for care *and* prevention. The vigorous appeals of Stewart Paton, the magnetic influence of Dr. Osler and Dr. Welch, and the genius of the leaders of the Johns Hopkins Foundations, who realized that their hospital would do its work best with a medical school and the university, have all together created a unique soil in Baltimore—for an institute representing a true clinic, *i. e.*, a hospital for practical work, research and teaching.

What is vaguely called insanity—a term which physicians would gladly leave to the lawyer if he can use it—is really a wide range of greatly differing conditions and diseases all playing havoc with our organ and functions of conduct and behavior. Many too long neglected lines of research enter into it, and it is only to be hoped

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now that the North Pole and the South Pole have been properly discovered that there may be more interest in expeditions exploring the biggest asset and the biggest problem of individual and nation: the brain and its proper working. The last years have opened up wonderful problems and opportunities for progressive work on the function and surgery of the brain, the important and more and more accessible rôle of certain glands regulating formerly mysterious functions; the control of the great scourges of humanity, the germs back of paresis and the actions of poisons; and at last science begins to take up with new and forceful methods the great problem of mental life in its narrower sense, the causes and modifiability of harmful cravings, and of poor mental habits, and the ways and means of helping people of widely different endowment to find their proper sphere. In all these lines the clinic must work, investigate and teach, and gather diligent students and workers around its patients and in its laboratories. But this work does not stop in the sanctum of the investigator. Just as bacteriology studies the water supply and the air and food of communities, schools and homes, so we psychopathologists have to study more effectively the atmosphere of the community and must devise safeguards in the localities from which the patients come, and to which they are to return.

The Johns Hopkins Hospital has always kept its gates wide open, and as far as possible this new division will carry on the best traditions of the hospital. If we can, in part at least, devote ourselves to the close study and care of disorders affecting definite localities and definite conditions and difficulties of life which we may choose as the center of intensive study; if we are not forced to take in cases unless we feel reasonably sure of achieving something definite for the patient and of ourselves progressing towards our goal of better knowledge; if the clinic is not forced to serve mainly as another crowded reception hospital, watching helplessly the endless procession of victims without time for thorough study, our clinic will, of course, be most serviceable. Even the ordinary current work will be at its best when we can study at close range the families and the environment in which the patient became sick, and to which he may have to return; and where we can really reduce the sometimes baffling troubles to intelligible principles of cause and effect, with all the helps of experimental pathology,

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therapy, internal medicine, neurology, psychology and sociology. Our patients, their families, the students, and finally a broader public will thus gradually acquire safer ideas than those furnished by tradition, by novels and distorted impressions, a faith not merely in sensational stunts, but in sane methods to prevent or adjust the many ways in which mind can be affected in concrete patients, a working out of safe ways of mental hygiene and sound living for those who need special precautions, and ultimately a wider realization of what makes for the most efficient life for the community at large, and the best policy for our American cities and states.

Our general hospitals aim to create *standards of sanitation;* and a psychiatric clinic must create standards of how to spend a *day* and perhaps *weeks* in a way in which a mind can find itself again if it is at all *possible.* This is why our clinic differs from the average hospital, and why so much stress is laid on possibilities of sane living and social work, beside the direct specific curative work. Above all things we must make it worth while to remedy and adjust *small beginnings of trouble,* which so far have received scarcely any systematic help. We must overcome the aversion to timely treatment created by the unnecessary wholesale declarations of insanity. We must show that the so-called insanities are not so different from so-called nervousness, that even ordinary impediments of our mental efficiency are worth a sensible adjustment, which is clearly valuable and more creditable to patient and family than groping about and shirking the helps available. We must do all in our power to see that physicians and students who see patients in their homes should become thoroughly familiar with and more broadly interested in the simple disorders whether they be harmless or more serious.

Mental difficulties demand a great deal of patient inquiry into the conditions of the body and its functions and the personality and the situations to be met. Consultations and a study of the case in the out-patient department will suffice for some patients; for others a stay in the hospital for more thorough examination and for a start in a new attitude towards life, and for special remedial treatment may be needed. Social work, *i. e.,* a study of the real life of the families is probably needed in most cases. Few families know how to cope with the problems or else many of the disorders would not occur, and this holds for the well-to-do as for the poor.

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This clinic does not come to replace or make unnecessary our state and private institutions; nor can it be simply a municipal institution. Yet I trust that Baltimore will derive its full share of unquestionable advantages through the resources of the clinic for individuals, for help and decisions in the work of the schools, of the courts and wherever investigations of mental health and mental hygiene play a rôle.

All this is part of a large medical problem; but also part of the great *civic* problem. Progress in the mental health issue, calls for a great deal of the right balance between individualism and civic solidarity and a far-sighted policy concerning the health problems. If we want to teach *some* people how to live, we *all* must realize that we have to give a chance to each according to his or her aptitude; the right to be *honorably* that which one is forced to be through the laws of nature and endowment, and the right to be stronger as a part of a well-fitted and truly amalgamated social body. Mr. Phipps has given us a wonderful center of mental orthopædics. With the help of the good will and active collaboration of Baltimore we hope to make it another one of the great departments which may well be a source of pride and an inspiration to every citizen, and a living and productive monument to this great philanthropist, Mr. Henry Phipps.

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THE SOURCES AND DIRECTION OF PSYCHO-PHYSICAL ENERGY.*

By WM. McDOUGALL, Oxford, Eng.

When I received an invitation to attend this happy celebration and to address this illustrious assembly, I felt that the leaders of psychiatry in this country had paid through my obscure person a fine compliment to the workers in pure science, had made a handsome acknowledgment of the value of studies in pure science to those who are opening up the new roads in clinical psychiatry; and I took it as a happy indication that those who are to carry on the work of this magnificent institution will continue to draw closer and to make ever more fruitful the relations between pure and applied mental science; a task, I will venture to add, in the service of which the psychiatrists of this country have already distinguished themselves, and have given a much-needed lead to those of my own country.

This being the significance I attribute to my presence here, I venture to bring before you some reflexions on a problem in physiological psychology which has long occupied my thoughts; a problem, which, though it is one of pure science, nevertheless has immediate and fundamental importance for psychiatry and towards the solution of which the workers in that applied science are already doing much and in the future will probably contribute still more largely and directly. It may be defined as the problem of the sources and direction of psycho-physical energy.

I propose to consider the bearing upon this problem of four lines of study; namely (1) pure physiology, (2) comparative psychology and (3) the experimental psychology of the laboratory, (4) the study of mental and nervous disease.

I am not one of those high and dry theorists who hold that physiology and psychology must be kept strictly apart as independent disciplines, and I do not suppose that there is anyone of that persuasion in this assembly. Therefore I make no apology

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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for considering the bearing of these several lines of study upon a problem which confronts all of them. If I consider the bearings of them in the order in which they were mentioned just now, I shall be recapitulating the order of development of my own thought on this problem.

Beginning my studies from the side of experimental physiology I came to regard the nervous system and its functions in the *atomistic* fashion that is still prevalent among the pure physiologists. According to this view it is composed of relatively independent cells or neurones linked together in complex chains and systems; each neurone is an irritable conductor, and its prime function is merely to react to any stimulation applied at any point of it, generally one extremity, by passing on a wave of excitement from that point to all its parts, commonly to its other end, where, if it is in functional connexion with another cell or other cells (nervous or other), the arrival of this wave of physico-chemical excitation acts upon that other cell as a stimulus which provokes in it a similar reaction.

On this view, then, the function of the neurone is essentially to transmit a stimulus from terminal to terminal; to give out at one end the stimulus applied to it at the other. These functional units are regarded as linked together on the plan of reflex arcs of very various degrees of complexity, through which the physico-chemical change propagates itself according to the relative irritability or openness of the various paths thus constituted.

According to this same view, the mental accompaniment of cerebral process consists in the successive and simultaneous appearance in consciousness of sensory elements or sensations of many different qualities, each being, as it were, attached to, and drawn at the heel of, one of the higher or cerebral reflexes.

In briefest outline this was the conception of nervous process which I found prevalent, and which is still prevalent, among the pure physiologists, and accepted also by some of the physiological psychologists. But, when I attempted to apply this scheme of neural action to the cerebral processes involved in the higher modes of mental activity (especially in the course of my experimental studies of attentive perception[1]), I very soon found that it was unworkable; not that it was false, but that it was inadequate; it

[1] "Physiological Factors of the Attention Process." *Mind*, n. s., Vol. XV.

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needed to be supplemented by a notion which, I found, had been vaguely entertained and used by those who approached cerebral action, not like the experimental physiologists from below, from the study of artificially isolated elementary functions, but from the study of the working of the psycho-physical organism as an organic whole.

This conception, which I endeavored to make more precise and to recommend to the acceptance of the physiologists, is that which I proposed to call the principle of the *vicarious usage of nervous energy*.[1] According to this conception, the energy (which all agree in regarding as converted from the potential chemical form to some active form within each neurone upon its stimulation) must be regarded as not confined to the neurone within which it has been liberated, but as capable of flowing on, passing into and through other neurones; so that each neurone serves, not only as an irritable conductor of excitation imparted to it, but also as a channel through which the energy liberated within it, and also the energy liberated within others with which it is in functional connexion, may flow from place to place within the nervous system. Such freely flowing energy may conveniently be distinguished from the latent energy stored in the neurones by the designation *Neurokyme* (Forel) or psycho-physical energy.

If we provisionally accept this notion (and there are no established facts of physiology which render it untenable, and many facts of psychology and of organic behavior which demand it), we are at once carried beyond what I have called above the atomistic conception of neural functions. For it follows from this notion, and from the abundant inter-connexion of the many sensory-motor circuits which compose so large a part of the nervous system, that in the waking active state of the organism, when all its sensory receptors are exposed to a perpetual rain of stimuli, the whole of the afferent side of the system, including especially the cerebellum and the basal ganglia of the great brain, must be regarded as constituting a great *common reservoir* of free nervous energy, or neurokyme, upon which all the various efferent channels can draw in turn.

[1] "The Nature of Inhibitory Processes in the Central Nervous System." *Brain*, 1903.

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Within the many parts of this common reservoir, the quantity or potential of free energy must be conceived as varying from moment to moment, according to the degree of stimulation to which it is exposed, and according to the freedom of escape permitted to it by the ever-varying conditions of tension within the whole system. But, owing to the abundance of inter-connexion, the freed energy resident in each part can under favorable conditions be led in part at least to any of the many efferent channels, there to be vicariously used for the production or re-enforcement of executive activities. Such vicarious usage, it seemed to me, is involved in all processes of concentrated effort, whether of bodily movement or of attentive perception or thought.

I found strong support for this view in the fact that it enables us to form a working hypothesis for the facts of neural inhibition, at all levels of the nervous system; equally for the reciprocal inhibitions of the spinal reflexes, the phenomena of sensory contrast, and that peculiarity of the higher nervous functions implied by the phrase—the narrowness of the field of attention. I refer to the hypothesis of inhibition by drainage, first foreshadowed in the *magnum opus* of William James, and later developed by myself in several papers.[3]

My experimental studies of perceptual attention led me, then, to supplement the *atomistic conception* of the nervous functions with this notion of *vicarious usage* of freed nervous energy, together with the two subsidiary hypotheses implied by it, namely, that of the *common reservoir* of freed energy, and that of *inhibition by drainage*.[4] And the acceptance of this group of mutually implicated notions seemed to go far to explain the fact that the nervous system works as an organic whole rather than as a multiplicity of reflex circuits.

But, when I turned to the study of comparative psychology, I soon realised that my conception of neural functions needed to be supplemented in yet another most important respect. In my

[3] *Brain. Loc. cit.* and "Primer of Physiological Psychology." London, 1905.

[4] Support of a novel and important kind for this conception has recently been drawn from the study of the correlations of mental functions by Drs. Spearman and Hart "General Ability, its Existence and Nature," British Journal of Psychology, 1912, Vol. V, p. 51.

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studies of the physiology of attention, I had well-nigh overlooked a fact of the most fundamental importance. The supplementary hypotheses had provided a neural mechanism for that perpetual shifting of the main stream of psycho-physical energy from one predominantly active neural system to another which is of the very essence of the play of attention in its neural aspect. I had provided a mechanism, but it was a mechanism merely, an inert machine. For its completion the scheme required the recognition of that most peculiar function of organisms which is best expressed by the word *conation,* or, if you like, *will* in the broadest sense of the word, effort towards or striving after ends.

Observation of the behavior of animals shows that the activities of each species are directed almost exclusively towards a small number of special ends—reproduction, the securing of food, the escape from danger, the protection of the young, the violent destruction of whatever opposes these great tendencies, and a few others that differ from species to species. The concentration of the animal upon any one of these ends does not depend upon its acquired experience, but upon some feature of its innate constitution; and that feature is what we commonly and properly call an *instinct,* an innate tendency to strive after some end of a particular kind, an *innate conative tendency.*

Reflexion upon human behavior shows that man also is endowed with innate conative tendencies, which, in the main, are similar to those of the higher animals; and that the great ends of his activities are determined, are set for him also, by these features of his innate constitution.[1]

Now we see that whenever an organism, whether man or animal, is placed in a situation which appeals to one or other of its instincts, which excites or brings into activity one of these great conative tendencies common to the species, that organism acts with vigor and persistency; all its movements and attitudes imply a great liberation and expenditure of nervous energy, which energy is *concentrated* towards securing the instinctive end, and yet in its superabundance tends to overflow its prescribed channels and to suffuse the whole organism. And what we call *emotion* appears to be the bodily and mental expression of this

[1] *Cf.* my "Introduction to Social Psychology." London, 1908.

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great liberation of nervous energy, concentrated primarily in certain nerve channels specific to each instinct, but secondarily overflowing and diffusing itself through the whole or a large part of the system.

Each instinct, then, seems to be in some sense a great spring of psycho-physical energy, a source from which, when it is tapped, when it is excited by the appropriate conjunction of circumstances, psycho-physical energy wells up in a great gush to re-enforce and sustain mental and bodily activity.

At this point I would remind you of a brilliant lecture by William James entitled "The Energies of Men,"[6] in which he drew attention to the extraordinarily vigorous and sustained efforts of which men sometimes prove themselves capable under special circumstances. In that lecture James suggested that such exceptional, such extraordinary, displays of energy imply that human nature has the power of drawing somehow upon sources or stores of energy which lie outside the organism, cosmic reservoirs of energy or what not.

Again I would remind you how in Prof. Bergson's scheme of speculative biology life is conceived as a cosmic energy which suffuses and animates each organism.

Now, if one were inclined to accept either of these allied speculations, one would, I think, regard the instincts as the channels through which these supplies of extra- or supra-individual vital energy are drawn into the organism. But as men of science it is, I think, our duty to forbear for the present from such speculations, and to attempt to understand the working of the psycho-physical organism by the aid of less speculative hypotheses.

It is certain that each instinctive mode of behavior implies the presence in the nervous system of an innately organised nervous apparatus of considerable complexity; and recent research makes it seem in the highest degree probable that the nucleus, the essential kernel of each such innate nervous mechanism is contained in the basal ganglia of the brain, more especially in the *optic thalamus*.[7]

[6] "Philosophical Review," 1902.

[7] Especially the works of Pagano ("Archives Italiennes de Biologie," 1906), and of Head and Holmes ("Sensory Disturbances from Cerebral Lesions." *Brain*, 1911).

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By these facts and reflexions I was led to supplement my earlier scheme of nervous functions in the following way. Still regarding every neurone as the potential seat of a katabolic chemical change of its substance which results in liberation of nervous energy; I came to think of the neural nucleus of each instinct as made up of a group of neurones which are capable in a much higher degree than any others of those metabolic processes whereby potential energy is stored up in the cell and afterwards liberated for discharge through the various channels of the nervous system. This notion seemed to give an intelligible and not impossible explanation of the vigorous and sustained character of the bodily and mental activities with which we respond to any appeal to our instincts.

But on general grounds it seems improbable that some few groups of cells should be endowed with this capacity of storing and liberating energy in so much higher degree than all others. Therefore I have never felt quite content with this conception; and of late a third view of the energy functions of the instincts has begun to prevail in my own mind. Is it not possible that the great outburst of nervous energy which occurs upon the excitement of an instinct to activity, represents, not so much the energy actually liberated by the katabolism of specialised neurones forming the kernel of the instinct, but rather energy liberated over a wider area and in some manner gathered together, concentrated, and directed to specific efferent channels, by the instinctive disposition?

We know that, in the case of many instincts, the conative tendency and the correlated outburst of energy can be excited through many different sensory channels, and we know that in ourselves, in whom free ideas play so great a part, the mere thought or representation of many objects suffices to bring them into activity. May it not be, then, that the essential kernel of each instinct seated in the basal ganglia is a wide channel (or one of high conductive capacity) upon which many channels converge both from below (the afferent channels from the sense organs and from the cerebellum) and from above (from the cortex of the great brain). The conception of the function of the instinctive dispositions in the nervous system to which we are led by this line of reflexion may be rudely illustrated by an analogy. I have

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likened the whole of the afferent side of the nervous system, and we might perhaps say the whole cognitive side, to a great common reservoir of energy; the instincts may now be likened to so many deep channels cut through the dam which holds back the contents of the reservoir; each such channel being closed by a delicately poised sluice-gate. When circumstances are such as to throw a little additional pressure upon any one of these sluice-gates (either by way of sense-impressions or representations), the gate swings open and allows the dammed-up energy to flow freely through in a great stream, which primarily finds its way to the efferent channels proper to the particular instinct, but also may overflow in many subsidiary and secondarily acquired channels; and we may suppose that these latter lead especially to those cortical systems which are the neural basis of the representation through which the instinct may be excited. Thus in a rough and vague way, by the conception of a circular reciprocal action between cortical systems and the sub-cortical nucleus of the instinct, we may perhaps explain the persistent self-sustaining character of instinctive activity; the instinct may be excited by way of an idea, or the excitement may primarily reach it (as in the animals) from the sense-organs; but then the instinct plays back upon the idea, holding it before the mind; and the idea in turn plays back upon the instinct-nucleus; and so the main stream of nervous energy is kept in the one great system of channels, and the psycho-physical energy of the whole organism is continuously concentrated upon the achievement of the end proper to the instinct; the play of ideas which subserves this process and enters into this circle of self-sustaining activity being in the developed mind indefinitely complex and prolonged.

The intensive and self-maintaining character of the conative process must be regarded as also conditioned in part by a similar circular or reciprocal excitation taking place between the instinct nucleus and many sensory organs; for the bodily activities in which the instinctive excitement issues bring about the stimulation of many sensory points both in the surface of the body, and in the deeper lying tissues, especially the viscera and the motor organs, thus setting free streams of energy in many afferent paths, all of which will be led back to the afferent side of the instinct-nucleus.

To pass now to the third of the four lines of study which I indicated at the outset as having determined my reflexions on

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this topic—namely, the laboratory studies of the Würzburg school or type. I desire more especially to draw your attention to those which throw light on the rôle of volition and conation in general. They have made it clear that in a great number of experimental investigations, especially the numerous elaborate experiments on memory and association, a factor of principal importance has commonly been altogether overlooked, namely, the influence of the *intention* of the subject, of the setting of the will, or, as the Germans say, the influence of the *Aufgabe* (*i. e.*, of the task prescribed and voluntarily accepted by the subject), the determining tendency, the attitude of consciousness, in short of *conation*. They have made it clear that, in the past, experimenters in this field (accepting more or less explicitly the atomistic psychology and the atomistic physiology of the nervous system) have attributed to links of simple association alone, effects in the way of reproduction which are due to two broadly distinguishable factors, namely, associative links on the one hand and the will of the subject on the other; and it appears clearly enough that in many such cases of coöperation of the two factors, the latter, conation, is of altogether preponderant importance.

I may illustrate the point very simply from experiments of my own. It is possible to read repeatedly a list of say twelve nonsense syllables in an attitude of indifference, one as nearly as possible passive; and 150 repetitions of such reading may fail to form such associations as will render possible the free reproduction of the series; yet, if the will be bent upon the task of learning the row, it can be committed to memory by as few as 10 or 12 readings.

Experiments of this class, then, are bringing home to us the magnitude of the influence of conation (volition) as compared with mere temporal contiguity or succession. Mental process is effective in establishing associations (and indeed in all other ways) in proportion as it involves strong conation, strong desire or volition; a fact which implies on the neural side *effective concentration of psycho-physical energy* in proportion to the strength of the conation.[8]

[8] It may be said with truth that laboratory research of this class does but establish in detail truths which should have been obvious to common observation. And in fact, the truth in question had not altogether escaped the observation of some arm-chair psychologists.

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Experiments of this class, then, justify in this way the notion that conation involves some special liberation or concentration of energy within certain psycho-physical systems; but they also compel us to recognise another fact, which also is accessible to common observation; the fact, namely, that a conscious conative effort having once been made (an intention or resolution having once been formed, the will having been consciously set towards a given end), the conative process continues or may continue at work *sub-consciously* for a period of time to which we can set no definite limit. The "*Aufgabe*," the intention, may continue to play a prominent, a predominant, part, even when it has passed altogether from clear consciousness.

In this way these laboratory researches tend to bridge over the gap between the older normal psychology and the newer psychopathology, of which the most important feature is the importance attributed to sub-conscious conative processes. I have in mind especially the doctrines of the school of Freud. I do not wish, indeed I am not competent, to express any opinion as to the value of these doctrines from the medical point of view. But I am convinced that they are performing an important service to psychology, especially in demonstrating the immense influence upon our mental life and conduct of sub-conscious conations, and in fact in forcing upon all who are concerned with human conduct the recognition of conation in general as of fundamental importance for our mental life. I am far from accepting all the conclusions and assumptions of the more extreme exponents of this school, but I hold that, as Prof. E. Bleuler has lately argued,[9] its fundamental tenets are continuous with, and are but developments of, psychological truths ascertained and widely accepted on other evidence than that of psychanalysis.

The affectively toned idea, the "complex" whether repressed or not, is an idea or system of ideas which has established functional reciprocity with one or more of the great conative dispositions; *i. e.*, in the language of analogy used above, it has acquired such a special connexion with one of the sluice-gates which close the great channels from the afferent to the efferent side of the nervous system, that the awakening of the idea

[9] "Die Psychanalyse Freuds." Leipsic, 1911.

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necessarily throws open to some extent the corresponding gate and thus starts the conative cycle. For this reason any such idea takes precedence of others less intimately connected with the great conative tendencies, as a determinant of both bodily and mental activity.

But, besides the powerful sub-conscious operation of conative tendencies, which is perhaps the most fundamental and best grounded doctrine of the Freudian system, there are other conceptions not altogether peculiar to it, but on which psychanalysis has thrown new emphasis. Among these I would indicate especially the notion of *transference of affect*, and that of the *sublimation of a tendency*. The latter especially is a process evidence for which is abundantly afforded by observation of normal life, as well as by psychanalysis. Both these conceptions lend themselves readily to interpretation in terms of the scheme of neural functions I have briefly and crudely outlined. Both obviously demand the notion that the *affect* implies the liberation of large quantities of psycho-physical energy and the possibility of the vicarious usage of this energy to support intellectual and bodily activities which have no primary or original connexion with the instinct whose excitement manifests itself as the *affect*.

I find Freud's conception of the development of the sexual instinct particularly interesting; although the view (apparently implied by some writers of this school) that every other human instinct is a mere offshoot of it seems to me very short-sighted. The conception interests me especially, because it harmonises so well with the notion of the neural basis of the instincts that I have suggested in this paper. Freud, as you know, conceives the development of the sexual instinct in the individual as taking place by the coalescence of a number of sensory-motor tendencies which in the infant are separate and distinct functions; if we conceive this process in its neural aspect as a growing together, a fusion into one common channel, in the base of the brain of the central ends of the several afferent channels in question, we see that such a process would result in a neural apparatus of the kind I have suggested as the essential neural structure of the instinct. We thus get a neurological picture of the process by which a number of 'erogenous' sensory surfaces and a number of 'erogenous' objects may be swept within the sphere of the sexual impulse, so that they con-

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tribute to the intensity of the developed impulse. We have also a rude explanation in neural terms of the fact that when the sexual impulse becomes directed towards its normal object, a person of the other sex, the various aspects and features (both bodily and mental) as well as the material belongings of that person all alike minister to, *i. e.*, serve to awaken and intensify, the desire which is rooted in the sexual instinct; for the various perceptual and ideational systems concerned in the apprehension of these various features become so many additional tributaries to the one great stream of energy which issues from the instinct nucleus.

I would add that, even though it could be clearly shown that the maintenance of the conative cycle depends upon some such anatomical disposition as I have suggested, we could not regard the existence of such anatomical dispositions as affording an explanation in any full sense of that concentration of nervous energy which seems to be of the essence of conative activity. For this concentration seems to involve a raising of energy from a lower to a higher potential and to be the supreme instance of that power of reversing the tendency to degradation of energy which is a fundamental property of all living tissue and perhaps its most characteristic attribute.

But I have kept you too long already. The object of my remarks has been to direct your attention to the *problems of the sources and direction of psycho-physical energy;* to indicate how several very different lines of study lead us up to these problems; and to suggest that all these different lines of study lend some support to a particular neurological hypothesis. There can be no doubt, I think, that these problems are fundamental for the understanding of the development and hygiene of the mind and of the genesis and treatment of much nervous and mental disorder.

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AUTISTIC THINKING.*

By PROF. E. BLEULER,
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A schizophrenic inmate of an asylum enters a room in a country inn, goes to bed and can only be removed by force, for he expects the Queen of Holland, who wishes to marry him, to arrive at any moment. He is a little, ungainly creature who never in all his life has known any but the most miserable surroundings. He is without a single advantage of mind, body or estate. It is impossible that the Queen of Holland should know anything of this poor patient in Switzerland, and if she did, he certainly would be the last man she could wish to marry. Neither the patient nor his intended bride has taken any of the preliminary steps necessary for a wedding. Neither for the civil ceremony nor for the celebration of the day itself is anything prepared. But all that does not prevent our patient from intending to become Prince Consort upon that day.

The thinking of this patient, which represents a very common type, appears to be sheer nonsense. He imagines something absolutely impossible, and what is more, he believes it to be reality. Its contradictions to reality do not exist for him.

If, however, we don't touch these things, the patient seems to be quite reasonable. He works all the week like a healthy man and goes for a walk on Sundays like ordinary people. Here he thinks rightly and reckons with reality as it is. His thinking, therefore, is not disturbed in all directions. Moreover, there is method in his madness. To marry a princess would naturally be the height of human happiness to any poor unfortunate devil. Our *fairy tales* testify to this. *And it is just a fairy tale with which our friend has to do,* only after a somewhat different fashion than with us rational mortals. He does not *tell* a fairy tale, he does not *read* one, he *lives* his fairy tale. Let us hold this in our minds, and it will at once bring the abnormal man nearer to us healthy ones.

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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Each of us has also his fairy tale. He does not indeed usually believe himself to live it. Only when he is quite alone and his thoughts are let loose does it come to light. The man is then rich, attractive, healthy and handsome. He always chooses those advantages in which he is most hopelessly lacking. Directly reality regains its sway, the plaything will be thrust hastily back into the cupboard, where it is hidden not only from strangers but from the owner himself; for, once outside the dream, he is not at all aware how far he can really identify himself with its characters. But perhaps I have said too much. The cupboard into which the toy is put is in our own brain, and it never shuts tight. Without our noticing it, the imprisoned fairy very often stretches out a hand. She guides our taste in the choice of a tie, she guides our hand when we make the flourish to our signature. By our bearing, our voice, the choice of our phraseology, she shows the expert the trend of our aspirations. We stand therefore far nearer than would have at first sight appeared to the lunatic, whose vagrant thoughts struck us just now so forcibly. At any rate the difference is only a relative one. And when we look more closely we find amongst all normal people many and important instances where thought is divorced both from logic and from reality.

I have called those forms of thinking *autistic*, corresponding to the idea of schizophrenic autismus, which, turning away from reality, sees life in fantastic pictures, and is founded precisely upon autistic thinking. Psychology, until quite lately, had only studied the logical laws of thinking. Just recently Le Bon, Freud and Jung began simultaneously with myself to direct attention to the autistic form.[1]

The knowledge of this kind of thinking is a necessary foundation for the understanding of morbid formations. Moreover, there are important parts of the normal Psyche that it is impossible to understand without a knowledge of the autistic laws.

[1] I have briefly discussed the views of FREUD and JUNG which do not appear to me to satisfy all the facts that come into consideration here, in the Jahrbuch für psychoanalytische Forschung, 1912, Vienna, Deuticke. LE BON I had not the opportunity of reading till later; his views are very interesting, but the psychological connections do not seem to me to be sufficiently recognized, and he has not attempted any application to pathology.

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These alone throw light upon the important, but hitherto almost ignored, inner life of the individual, upon the influences which shape the creations of the poets, and upon those which impel the peoples in the formation of their views of custom and religion, and in their dealing with home and foreign politics.

The nearer the abnormal come to us normal, and the better we understand them, so much the more successfully can we deal with them, and even if we cannot cure many psychoses as we heal a broken bone, yet we can discharge an increasing number of them so much improved in health, that they are quite capable of living in the society of men and of earning their living. And what must guide us therein is not the diagnoses and the systematical conception of individual diseases, but their psychological mechanisms, as *Adolf Meyer* has shown in his very clever pamphlet. In many sorts of illness it is quite indifferent how we describe and classify, if we can only understand and help the patient.

I am pleased to speak about these things before an American audience, because in this country psychology is free from the prejudices of the old continent, and has in so many regards left behind our sometimes medieval conceptions.

A child plays in the bath with the floating thermometer. He pulls it to and fro pretending that it is a boat. He himself travels on it. Then he makes big waves which sink the boat. Now the thermometer is the little fellow himself who has fallen into the water and sunk, and immediately afterwards it comes up as a big fish that is going to swallow the boy, and is at the same time the stick with which the fish is driven away. At other times the child imagines himself to be a father, a mother, a general, and he acts accordingly, although with the most inadequate material and with the situations not at all corresponding to that which he wishes to represent. Here he ignores reality in a high degree, he only uses just so much of it as is necessary for the part he is playing. The thermometer is there in reality, he uses it in reality, not as a thermometer however, but in a multitude of characters which he imposes upon it. Thus he effaces the difference between reality and fantasy. If a stick, that represents an animal, is broken, the child has real sympathy with the animal, and is in earnest when he tries to console it.

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Like the child who wishes himself grown-up and grand, the *poet*—at least the true poet—transforms his unhappy love into a happy one, or glorifies it in such a way that it appears to him tragically beautiful and sublime. His hero always contains a piece of his own soul, and when he lets him perish he is the personification of one of the tendencies which the poet would wish to overcome in his own life, or one that has stained his conscience with guilt. The death of his hero atones for the poet's own crime. Goethe punishes himself in Clavigo and Weisslingen for having deserted Frederica Brion. Schiller realized his ambitions in the Brothers Moor, in Fiesco, in Wallenstein, and showed himself to what end they must inevitably lead. In poetry certain real affective needs of the poet are alive, and his characters have an additional reality for him in that he takes as vital an interest in them as in actual human beings. His friends found the poet *Kleist,* who had just drawn the dying scene of Penthesilea, dissolved in tears.

Poetry is closely related to *mythology.* And between the two stands *legendary lore,* the formation of which is naturally a very complicated one. We know that there are not real personalities behind all the heroes of the " Sagas." The German Siegfried and the Jewish Samson are really sun gods, but what later generations have made out of them are beings with the human ideals, the virtues and the vices of those who created them.

The greater part of mythology is really symbolism. The times of the year and day, the forces of nature, the fructifying and the scorching power of the sun, the animal procreative power and similar things are represented as human characters and actions. The process is, even more than in the poet, an unconscious one. The myths are understood literally. The sun god drives his chariot across the heavens, and the Greek goddess of wisdom is born from the head of the God of heaven. These conceptions are divorced from reality in a high degree. There are chariots, it is true, but we have no reason to suppose that they drive across heaven. Of course children are born, but never out of the head of a man. All these are examples of a form of thinking that acts independently both of logic and of reality.

If there is not so sharp a contrast with realistic thinking in the play of the child and in poetry, that in mythology is a much more

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direct and brutal one, and from the logical point of view these products, with all their wonderful poetry, are sheer nonsense.

In like manner we see in representations of the universe how the earth is supported by an elephant which stands on a huge tortoise, the tortoise on a snake and so on *ad infinitum*. We see the same in these conceptions which answer to our desires to control destiny. With magic and sacrifice and prayer men will try to divert all evil and to attract all good. Neither nature nor experience give us any ground for believing these things, except in so far as we ignore many causal connections between the events, and can therefore assume them, where we see none. But to assume such things as magic and witchcraft we have no logical ground whatsoever.

How great the gap is between autistic and logical or realistic thinking will be clear to us when we realize what logical thinking really is. Firstly it represents occurrences in the outer world and their associations. We have often heard thunder following lightning, therefore whenever we see lightning we expect thunder, and when we hear thunder we take it for granted that it has lightened. We see regular fixed results follow our own actions. We associate the two, and when we desire a particular result we call to mind the actions by which it will be attained. These examples will perhaps suffice to indicate that in logical thinking we reproduce reality.

To fit ourselves to new situations we must be able to create new combinations of the conceptions of experience. So far as these correspond with reality they show us new ways of action, whether it is a question of buying a pair of shoes, or of steering an aeroplane. If they deviate from reality they pass over into autistic thinking.

Our human understanding can never compass everything; we can therefore draw no hard and fast line between the two forms of thinking, but the more knowledge we possess the greater will be the possibility of logical thinking. We moderns believe ourselves to be justified in our assumption that the earth moves round the sun and that the sun himself is a mass of glowing gases. There is no longer any place in our mind for Apollo's chariot.

As a rule the symbolism of the normal individual replaces conceptions which are difficult to represent and to conceive of or

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against which there is a resistance. Especially we like to replace abstract by concrete ideas.

The whole railway system will be represented by a wheel with wings, a serpent will represent sin. In dreams and in morbid conditions these symbols will not only be used more frequently, but they will be extended to embrace even easily representable things: a room, for example, may represent a woman.

This can go so far that father and mother are interchanged in the patient's mind. A schizophrenic may conceive a hatred against his father, because he is jealous of him on his mother's account, and then put his mother in his place and want to kill her in his father's place. A father as patient may confound himself in his letters with the mother of his children.

It strikes us, at first sight, as absolute nonsense when a patient maintains that she is Switzerland and the cranes of Ibycus. Upon closer observation we see the sense in her assertion. The patient is confined in an asylum, deprived of her liberty. She yearns for liberty. Switzerland is a Republic, a free country: she also wants to be free. That is the first meaning of her expression "I am Switzerland," but to her it means still more, she takes the thing also literally and *is* Switzerland, Helvetia herself, who is engraved on our coins. Switzerland even belongs to her. She quite means all this in the literal sense. We see here how in autistic thinking the conceptions dissociate themselves and one is put in the place of the other. She *is*, moreover, the cranes of Ibycus, that is, she has—

> Frei von Schuld und Fehle
> Bewahrt die kindlich reine Seele.
> [Kept free from guilt and failings
> And pure her childlike soul]—

As Schiller says in his poem entitled the "Cranes of Ibycus." Thus nonsense becomes sense.

A particular form of autistic idea disturbance is the systematic shifting of sexual conceptions to other parts of the body, more especially upwards. A normal two-year old child has been known to ask his pregnant mother: "Why have you such a big head?" It should be stated that this child knew well what the alteration in his mother's figure meant.

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Many primitive genital hallucinations are transferred later to other parts of the body, and in the fairy tale as in the crazy ideas of the schizophrenic many a child is born from the mouth. In some instances the poisoning delusion of women originates from their desire for offspring. They believe, as in fairy tales, that they will become pregnant from the food they are given, and some supposed admixture with the food is symbolized as poison.

In the autistic thinking the grossest contradictions may exist side by side, and these contradictions may be within the thought itself as well as contradictions of the representations with the outer world. Just as the child may be little Jack and at the same time the great general, the insane man may be John Brown, but at the same time God Almighty, and often in addition the Pope or the Emperor. The physician who visits the patient is the physician, but he is also the clergyman, Mr. Robinson, and then Major Smith, and the patient is quite aware of all this. Whilst the playing child never loses a certain feeling that he himself puts something into the things, to the deranged these ideas correspond to reality.

But so long as the insane are composed in their thinking, they are partly conscious of the contradictions with what sound people call reality. The possessor of delusional millions gets nothing out of them but the feeling of being rich. As soon as he wants to enjoy his riches, they escape him. To an insane workman the delusions promise a promotion in his position, which, of course, does not happen; so long as the man has a need of causal connections he must seek an explanation for such a contradiction. This explanation lies near: there are people who would keep back his fortune, or slander him to his superiors. The sane and logically thinking man would look for reasons in the outer world, and inquire whether his suspicion is just. The autistic himself creates these reasons. He believes himself justified in concluding from accidental events that certain people speak evil behind his back, but in reality the *fear* of having enemies is for his autistic thinking identical with the fixed *conviction* that they do exist. The autistic thinking does not need to reckon with reality.

Autistic thinking has special connections with sexuality. As Diogenes has already observed, one cannot still the pangs of hunger without real food, but sexual desires may be satisfied by

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manipulation on oneself and by mere imagination. Schizophrenic patients may feel all the delights of love through their hallucinations. Nevertheless this unreal satisfaction is not always a full one. Above all, the feelings of sinning against nature mixes something unpleasant with these hallucinations. To explain this, the patients create again delusions of persecution, which, of course, are usually connected with the same person who have been loved. The beloved of the delusion becomes therefore, as a rule, the persecutor. There are still other reasons why autistic thinking does not always reach its goal. It has often its contradictions in itself. Many of our desires, it is true, are connected with agreeable feelings, but often at the same time with disagreeable ones—they are *ambivalent*. The insane peasant may imagine himself a prince and a king; but if he gives the dream too much reality and must also assume the duties of a king and the other unpleasantnesses of the position, he would, I think, gladly resign the honor. Every beloved person has besides his good qualities also disagreeable ones; for instance, his person may be charming, but he has no property. A wife may hate her husband as man, but she will love him as the father of her children.

This ambivalency leads, even with normal people, to difficulties of decision and to inner conflicts. Still more with schizophrenics, with whom we observe scarcely any but ambivalent tendencies at the root of the delusions. Very frequently the mother loves her child because he is her own, but at the same time she hates him because he is also the child of her hated husband. Now and then it happens that in a moment of hatred she kills the child, and afterwards she bitterly repents of her deed. But infinitely more frequent it may be that her wish that the child should die only brings out the delusion that the child has really died. But even then she will be very unhappy; she laments in a normal way the death of the beloved child, although her hatred for him had been the cause of her delusion. More even than that, she will often accuse herself of having killed the child, a fact, which is again a reaction of the unconscious desire that he should die, or that she herself might kill him. In this manner originate frequently quite unfounded self-accusations for a wrong that one has not done at all, but that one has quite unconsciously desired to do. Autistic thinking has represented the wish as fulfilled.

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A certain degree of ambivalency is always connected with sexuality, another reason why this is of such great importance in autistic thinking. Psychanalysis shows that almost all men have at least, in a rudimentary degree, certain abnormal sexual tendencies which, however, scarcely become conscious for them, or at least are overcome without any conscious effort. These abnormal tendencies will be branded as immoral or repulsive either by costume or by the sentiments of the individual himself. The man connects them with disagreeable feelings, although in accordance with their nature they would of course be allied with feelings of pleasure. That is one of the reasons why lust and sin are so closely connected. The positive feeling connected with the abnormal tendency causes in the autistic thinking of morbid states the perverse wishes to appear as though already fulfilled, a fact from which the feeling of repulsion creates delusions of guilt, and various sorts of expiatory acts which express themselves as the different kinds of obsessions.

Especially to be noticed is the Oedipus-complex. The Saga tells us that Oedipus killed his father and married his mother. It was known even in the time of the Greeks that the story was the expression of a universal tendency, and psychanalysis as well as the study of poetry shows us that even now in the love of children for their parents of the opposite sex there is a certain admixture of sexuality; it is true that this tendency will, perhaps, even at the time of its origin be repressed to the unconscious and come out directly only in dreams and indirectly in its results. In the autistic thinking of neuroses and psychoses we very often find self-accusations and hallucinations which give expression to the love for the parent.

We have seen thus far that autistic thinking is not bound by the laws of logic and reality. It is unlogical, and permits the greatest contradictions with the outer world and in itself. The autistic patient may empty the slops in the asylum and at the same time believe himself to be the emperor of the world; or he can be nursed in his own family with all the kindness of which a mother or a wife is capable, and nevertheless believe himself to be constantly ill-treated. The insane as well as the sane can have the most diverse wishes side by side: to be a child again, in order to be able to enjoy unconditionally; to be a man in his prime, in

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order to obtain all that life has to offer of power and greatness, to live long and to exchange this existence for Nirvana; to possess the woman he loves and yet retain his full liberty.

From the different examples mentioned above we may recognize how autistic thinking, cut loose from logic, will be directed; it has a tendency to represent desires as already fulfilled. Freud asserts that his pleasure-mechanisms, which correspond in some degree to our autistic thinking, *can* do nothing but desire. But then he is forced into somewhat daring explanations. In analysed dreams he often finds fears represented of which some can easily be explained as hidden desires, as that of a friend who would like to prove to him that his theories are false, and therefore must have a dream which apparently contains no desire. In other cases he might back his argument by saying that in fact every fear contains a desire, namely the desire that the dreaded event shall not happen. In this manner, of course, everything can be explained. If we observe delusions in general we find that desires certainly play a great part in them, but that the delusion content is always dependent on affectivity. The melancholic has depressive delusions and feels himself sinful, poor, incurably ill. The euphoric has grandiose ideas, he is a particularly clever man, rich, more efficient than ever, and if his intelligence is somewhat disturbed he may possess the whole world and think himself equal with God. The irritated becomes suspicious, and is inclined to feel himself injured and persecuted.

For him who knows the psychology of affectivity it is easy to understand the formation of these delusions. Every affect has the tendency to favor those ideas which correspond to it, and to hinder or to suppress those which are in contradiction to it. The jolly do not like to think sad thoughts, the sad are even less inclined to let happy thoughts arise in them. Now when only one tendency is taken into consideration logic must needs come to a false conclusion, like the bookkeeper who only takes into account the assets or only the liabilities.

Now these conditions, which usually come into consideration in autistic thinking, do not deal with universal disturbance of affectivity (as with the maniac or melancholic), but on the contrary with single affectful idea complexes which can generally be described as desires or fears. The feelings connected with them

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must naturally have their effects, that is they create a tendency to ignore the inhibitions which hinder the fulfillment of the desire or the realization of what is feared; thus the patient is driven to the conviction that the wish has been fulfilled, if other tendencies do not correct it. With the normal it seldom comes to deceptions which stand in direct contradiction to reality, but where the possibility of fulfilment is present, it is very easily imagined: "What one wishes, one believes."

What keeps the autistic thinking in healthy persons within certain limits is in fact logical thinking. Where the balance between affectivity and logical thinking is upset, autistic thinking may get the upperhand:

1. As with children, who have not enough experience to discriminate logical possibilities;

2. In subjects which are not sufficiently accessible to our knowledge and our logic; in the questions of the first principles, in the weltanschauung, in religion, in love;

3. Where for any reason the emotions obtain too great a significance, as in strong affects, be they pathological or normal, whether they are caused by accidental circumstances or by the subject's own temperament;

4. Where the connection of associations is loosened, in dream, in schizophrenia and so on.

Whilst universal pleasant or unpleasant emotions have equal significance in the usual formation of delusions, in those emotions which are connected with particular ideas the effects of the two qualities are very different. There is indeed a universal tendency to seize pleasure and to repulse pain. The mere thinking of pleasant things gives pleasure, of unpleasant things pain; thus the man in an average mood will much more easily call up pleasant than unpleasant ideas. That is the reason why autistic thinking represents more fulfilled desires than realized fears.

The suppression of unpleasant thoughts has still other indirect consequences. It does not always succeed. The repressed thoughts may live on in the unconscious and from thence provoke abnormal symptoms which will be created in an autistic way. In its stead a symptom will come to the surface: the sexual sinner forgets his misdeeds and strives for exaggerated physical purity. From that may come a washing obsession; or somebody wishes

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that his rival who is called Stout may die; he goes in for a stupidly exaggerated weight reduction cure and kills Mr. Stout in his own body.

We have here touched connections between autistic thinking and the unconscious. Freud is inclined to identify the two; what I have here called autistic thinking is for him the form of thinking of the unconscious. You see, however, that in mythological conceptions, in the play of the child, with many poets, in dreams and in many other instances autistic thinking is just as conscious as logical thinking. Every psychologist who does not, from theoretical reasons, altogether deny the unconscious, knows that this also can think logically; Carpenter, for instance, has cited a great number of cases in which the unconscious activity was a logical one, as when a mathematician suddenly finds the solution to a difficult problem.

Autistic thinking can therefore be conscious and unconscious, but in the cases which have pathological significance it is almost always unconscious. To the neurotic only his symptoms, his pains, his obsessions will usually become conscious, the underlying autistic mechanisms of which will be hidden from him. The voices of the schizophrenic express ideas which are produced in autistic unconsciousness, and delusions often may suddenly rush up out of the unconscious.

The unconscious can think logically or autistically. I don't want to say that it thinks more often autistically than logically; but for pathology the autistic unconscious has also its particular significance in regard to the logical unconscious.

In comparison with the guidance of autistic thinking by the emotions the other kinds of associations of ideas have little significance. Many of its associations follow, of course, the ordinary logical laws. But only such associations will be used as correspond to the feeling-toned idea that is to the desire or the fear. Besides, these secondary associations which we know from the free associations of the normal and which in logical thinking are kept down as much as possible, may become more prominent. But this occurs only as far as they can be used for the aims of autistic thinking. Thus we find that the thoughts spring from one object to a similar one, and especially that they generalize themselves. A girl is frightened by a bull. The first impression was

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made by its genitals. Afterwards she identifies these with the horns. Some years later she had forgotten the whole event; but becomes afraid of everything that looks like horns or is called horn; e. g., she will eat no soup which contains horn-shaped noodles. Often the association is directed by the word-sound, as in the case of the above-mentioned rival Stout, who makes his anti-fat cure. But most frequently slight similarities will be used to represent one thing by the other in a symbolical way. The sun moves across the heavens, so by some he is pictured with feet, to others he is a god who drives in a chariot.

Such symbolic images occur just as well among the modern schizophrenic as in the makers of myths of old times and among savages. Certain scientists have therefore spoken of an archaistic form of thinking. I myself cannot accept this opinion. Savages can think as logically as ourselves in all the things they understand. The difference lies in the fact that they understand fewer things and therefore with them the autistic thinking more frequently comes in than with us; and we on the contrary think as autistically as the ancients, whenever reality allows it. This year, 1913, is dreaded by many people; in certain countries a great number of marriages have been hastened on at the end of last year in order not to allow so important an event to be connected with the unlucky number of thirteen. Our political parties think autistically just as much and as little as the Romans and Greeks did.

Often, especially in politics, autistic thinking serves instincts. That is quite intelligible, when we know how closely connected instincts and emotions are. But it often leads our instincts astray. The taboo makes the life of the savage a chain of ceremonies which would be unbearable to us, and which would stand in the way of any development in culture, even if the race were capable of it. The alleged witchcraft gives the medicine man the means of living in plenty not only without productive work but greatly to the harm of his fellows. Religious wars from the time of Buddha to our own century, the burning of heretics and witches are no beneficial events for humanity; and even now religious division is the greatest danger for our mightiest military power, the German Empire. In all civilized countries the party system affords opportunities of rendering the best energies unfruitful and of lowering public morality; for the outsider detects in them

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only a very small kernel of ideal or material aims worth fighting for, whereas it is always catch-words and religion-like dogmas that are the deciding factors.

How then could autistic thinking develop and last, if it is so harmful among both normal and abnormal people?

It is the most important distinction between the human understanding and that of the higher animals that it can create new combinations. But, as I have said, the boundary line between rational and autistic speculations cannot be laid down by human intellect. What is inconceivable to-day may to-morrow become fact; what is firmly believed to-day may to-morrow become false. Therefore a humanity without autistic thinking could not have been developed. But autistic thinking being once there, it will be used, whensoever convenient, whether useful or not. Now conceptions are pleasant or unpleasant just as well as outer experiences. One can therefore give pleasure to oneself by dwelling on pleasant ideas. But the animal organism is from phylogenetically ancient times adapted to seek pleasure and to avoid pain. In the outer world the pleasure and pain-provoking events are such that this reaction upon them corresponds in general to our needs. But in pure imagination at once a new field of unlimited posibilities unfolds itself. Therein is the danger for man and at the same time his advantage over the brutes.

The health of the individual and of nations demands a balanced proportion of autistic and realistic function. The realistic must control the autistic. But the autistic contains most of our ideals. Let us take care to keep them on the same level as our technical progress and not to misuse them to harass and to destroy our neighbors.

But autistic thinking has also a direct value. The child accustomes himself by his phantasies to the situations of his future life; in autistic activity he exercises his power of thinking, as the kitten does his hunting capacity in play. The autistic forms of thinking in religion have for thousands of years given form to human ethics; they have created ideals which would be impossible to logical thinking, dim ideals certainly, but guiding stars towards which mankind may direct his groping way.

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PERSONALITY AND PSYCHOSIS.*

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The fact that there exists a relationship between the mental characteristics of an individual, as they exist before a definite psychosis breaks out, and the type of the psychosis itself, is at times so obvious that it has always attracted more or less attention. In this brief discussion of the subject of personality and psychosis, which I have been asked to present here, I wish to limit myself to a consideration of this problem in so far as the two largest groups of psychoses are concerned, namely, those which we designate as manic-depressive insanity and as dementia præcox. It would lead me too far to give anything like a survey of the opinions held in regard to the problem which interests us here. It may suffice, therefore, to state briefly Kraepelin's standpoint, which is quite representative of the *general* drift of opinion. He admits, with many others, that in the mild forms of manic-depressive insanity the psychosis appears to be a continuation or further development of a somewhat peculiar personality, and we may add here that the same is usually recognized for some other psychoses, as, for example, certain paranoias. On the other hand, he points out that in the more marked states of manic-depressive insanity, the personality is so much submerged that we can no longer speak of any relationship between personality and psychosis. So far as dementia præcox is concerned, the special personal traits, if any exist, can, in his opinion, not be of any great importance, since the psychosis, like general paralysis, shows so much that is alike in the different cases that the personal peculiarities completely recede to the background before those phenomena or defect symptoms which are caused by the disease process. Therefore, what is admitted generally for the neuroses and for the so-called psychoses of degenerates, namely, that the active symptoms represent a further development of earlier milder traits, is admitted only for some form of manic-depressive insanity, while in regard to other forms,

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and especially in regard to dementia præcox, the question which is asked seems to be rather, whether the psychosis is or is not colored by the personality.

What appears to us, from our studies, the most natural point of view from which to consider the whole problem, is to regard the peculiarities of the personality, and the psychosis both, as deviations along the same lines and as phenomena of the same nature.

We shall first briefly present the facts which a study of the anamneses and of the patients teaches, and I may be pardoned for giving here essentially our own results. I may state that the systematic collection of facts refers especially to better situated patients, which, for a study of this kind, furnish material that is more reliable than that gathered among a more uneducated class. But it should also be added that general observations in our more recent material confirm our conclusions, and it has scarcely seemed worth while to accumulate statistics, as the essential, after all, is the determination of definite tendencies.

In *dementia præcox*, which is regarded by many as a disease process, while the constitutional element is more or less plainly disregarded, the incentive to look for personal peculiarities has for this very reason not been very great. Nevertheless, the facts are often so plain that most writers speak of a certain, though relatively small, proportion of cases of dementia præcox which have shown certain peculiar traits more or less throughout their lives. After Adolf Meyer had formulated his conception of dementia præcox as a habit deterioration, and had, therefore, insisted upon the importance of the personality in the genesis of the disease, I was able to point, several years ago, to the frequency with which certain characteristics were found in the individuals who later developed dementia præcox. It was found in two different studies that in as many as from 50 to 60 per cent of the cases the chief traits which had existed before the mental breakdown were those which I at that time called the shut-in tendencies—tendencies to which Professor Bleuler has recently applied the term autism—and I was also impressed with the fact that, especially in the second, more carefully searched, group, only a relatively small proportion of cases were found to have been quite natural, frank, open and well-balanced. Professor Bleuler, in his admirable work on dementia præcox, also comes to the conclusion that if we

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have adequate anamneses it is rare not to find personal peculiarities before the onset of the psychosis, and he also speaks of the large percentage of the type of personalities which we have mentioned. Still more recently, Ritterhaus has confirmed these observations, so that at present there can no longer be any question as to the facts. It is as yet, perhaps, difficult to interpret the symptomatology of all these peculiarities, but that the shut-in tendencies, which are the most common, are also the most characteristic, can hardly be denied. From this point of view we must probably interpret some other pronounced traits of peculiarly warped personalities, but it would lead too far to discuss here the different types. It must, of course, be admitted that there are cases in which we are unable to obtain a history of such abnormal traits before the psychosis, but it is interesting to note in this connection that, as we shall see, such cases are less frequent in the group of dementia præcox than in that of manic-depressive insanity. We shall return to this later.

In patients who develop *manic-depressive insanity*, it has been found that in a considerable number either hypomanic or depressive tendencies were found to be a personal characteristic throughout the lives of the individuals. They are described either as overactive, stirring, inclined to overdo, vivacious, or as intense and easily excited, high strung and very enthusiastic, or sometimes as of violent temper, etc. On the other hand, other patients are described as inclined to blue spells, to fight battles over again, prone to worry over trifles, borrow trouble, etc. In some instances, a certain instability of mood was also noted—in other words, the two extremes of emotional reaction are found in these persons. These conditions were observed in 44 per cent of 218 cases, or, more specifically, the elated type in 18 per cent, and the depressive type in 26 per cent. If we now group the cases into those who show in their psychoses preeminently manic elements, either recurrent manias or both manias and depressions, but with an emphasis on the former, and into a group of cases which show in their psychoses depressive elements, that is, either merely depressions or both depressions and manias, but with an emphasis on the depressions we have two classes which we can compare as to the frequency with which one or the other personality occurs. In this comparison it was found that certain very definite tendencies prevailed, inasmuch as in the patients who had more preeminently

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manic attacks, the hypomanic traits of the personality predominated very greatly over the depressive traits; while in the cases which showed essentially depressive psychoses, the depressive tendencies of the personalities predominated very greatly over the hypomanic tendencies. It is of interest to note that the tendency of personal traits to coincide with the character of the psychoses was not seen, for those personal peculiarities which are more plainly within the normal lines (I mean for the not inconsiderable number of persons who are described, on the one hand, merely as cheerful, or, on the other, as quiet) these characteristics occur with about equal frequency in the different groups of manic-depressive insanity. From this study, two facts are evident: First, that *exaggerated* emotional traits occur in a considerable proportion of persons who develop manic-depressive psychoses. Secondly, that the personal traits and the type of the psychosis, though not always the same, show a marked tendency to run along similar lines.

In discussing all these findings we shall take the two groups separately.

In the case of dementia præcox we have seen that among the individuals who develop psychoses belonging to this group the number of abnormal personalities is much larger than is generally supposed. This is the important fact with which we must start. By many psychiatrists dementia præcox is regarded as a circumscribed disease process which is supposed to be due to some toxic agent. In this conception the question of constitution is either disregarded or it is at any rate not given much consideration in the formulation of the nature of the disease; but it appears to us that the constitutional factors should here form the very starting point of all further discussion, because those factors which, in the group of degenerates, for example, are justly said to indicate the constitutional nature of the disorder, namely, the tendency to abnormal reactions through life, together with the great importance which heredity plays in them; these factors are equally prominent in dementia præcox, as in the other constitutional psychopathies. I fail to see the reasons for interpreting the personal peculiarities seen in so many dementia præcox cases from an entirely different aspect than we regard them in many of the other disorders, and to look upon them as due to a disease process not determined by constitutional factors.

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There are, therefore, certain similarities between such conditions as the neuroses and dementia præcox, and we must ask whether the dissimilarities are so great that we have to disregard this parallelism and take refuge in a totally different kind of interpretation of the disorder.

Of recent years much attention has been paid to the psychological mechanisms of dementia præcox. It has been possible, by careful studies, to understand many apparently bizarre manifestations of the disorder. If one has observed many cases of dementia præcox from this point of view, one cannot help getting impressed with the fact that just as is the case in the neuroses, so here the symptoms are not merely scattered productions, but have a definite meaning to the patient; indeed, this meaning is sometimes more transparent in dementia præcox than in the neuroses. It has also been possible to show that mental causes are frequently found to bring about the attacks. I need hardly say that by Freud and Jung much stress has been laid on the essential similarity between the neuroses and dementia præcox, and, above all, it is Professor Bleuler who, in his recent work on schizophrenia, has called attention to the possibility of a psychological interpretation of many symptoms, as well as to the precipitating mental causes, at least so far as the acute syndromes are concerned; and, indeed, our experience shows that while physical causes play their part in precipitating attacks, as they do in the case of the neuroses, the *mental* causes are the more prevalent and the more important. But we must not expect such causes to be simple and at once comprehensible without further analysis. They need not be single occurrences or demands for adaptation, but situations sometimes of longer duration, and we must expect to understand them only in their setting, as it were, in the meaning which the patient consciously or unconsciously gives to them; in other words, we must know their background, their relationship to various trends in the patient's mind. Or we can also express it that we must know the internal development of peculiar attitudes in the patient's mind which determine the reaction. Whatever we may think of certain formulations of it, we must admit that psychoanalysis is the first systematic attempt to deal with the internal history, or the development of mental attitudes and reactions; and that such an internal development must exist can hardly be denied, nor can we deny that

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studies which elucidate such internal developments should stand in the foreground of psychiatric interest. Professor Bleuler, who has pointed to the frequency with which acute syndromes in dementia præcox are produced psychogenetically, assumes, however, an underlying disease process of a different nature and caused in a different manner. To us it is difficult to see why the personal peculiarities and the acute syndromes should not both represent reactions which are partly determined by demands of adaptation, partly by constitutional inability to accomplish such adaptations. Some years ago I took occasion to emphasize the essential similarity between the personal peculiarities and the psychosis, and especially the deterioration in dementia præcox, and what we now know about autistic thinking makes such a parallelism even more apparent.

If I understand the situation correctly, there are chiefly two points which determine Professor Bleuler's view that the acute syndromes and the disease, as such, are not of the same genesis. The first point is the fact that the autistic thinking in dementia præcox is more dissociated than that of normal day dreaming or that of hysteria. To this we can only say that we have in the personalities who develop dementia præcox a tendency to reactions which, primarily and fundamentally, interfere with the contact with, and the reference to, reality. Whatever we may find to describe in these personalities, this is evidently the central feature. It seems, however, that this marked turning away from reality is in itself enough to explain the greater deviation from logical thinking, which means after all, thinking adapted to reality and determined by the relationships in the world of phenomena. We appreciate this all the more when we know that failures of adaptation are regularly associated, in this disorder, with a still greater exclusion of reality. The second point is one which is frequently mentioned. I mean the fact that it is difficult to regard from the same aspect the functional, recoverable neuroses and a disorder which, like dementia præcox, leads to deterioration. This, it must be admitted, argues against the functional nature of the disease. But the rather uncertain conception of functional disorder, after all, means only that the lack of adjustment does not go beyond a certain elasticity, to the extent that the swinging back to normal activity would be precluded. I mean: We lay here stress upon

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the recoverability, a factor, therefore, which surely is of great practical importance, but we do not know whether it is of fundamental significance, so far as the nature of the disease is concerned. I do not know how we could otherwise formulate the situation which we find in the neuroses and in the constitutional disorders generally, than in the sense of a defect of development and a defect of adaptation. If we assume in dementia præcox a similar constitutional defect of adaptation, as what we find in the neuroses and the other psychoses which belong to this group we are as yet not able to say for any of these disorders upon what this defect depends, but since we are dealing with mental adaptations it is natural that we should be able to express the interrelation in terms of demands for mental adaptation and mental reactions, in other words essentially in terms of mental functions. We must expect, therefore, to be able to describe what takes place in this way, and that this is becoming more and more possible no one who has worked with actual cases from this point of view will deny. But this is only one aspect. We cannot doubt that processes of a more organic nature accompany the mental ones, and we naturally think of brain processes and processes associated with internal secretions, but since we know so little of such factors we are primarily impressed with the mental side. We must also expect that any defective endowment must have its organic foundation, but here, too, it is at present difficult to speculate. In the case of dementia præcox there are, however, certain facts which are of great importance in this connection. In the first place, the anatomical studies of the brain of dementia præcox cases sometimes reveal *actual defects of development*. We find atypical nerve cells, nerve cells with two nuclei, indeed even evidences of microgyria. Such facts cannot be disregarded. The second point is that dementia præcox seems more often associated with congenital intellectual defects than, for example, manic-depressive insanity or the neuroses. This intellectual defect is by no means an integral part of dementia præcox, and does not belong to the usual characteristics of the constitutional traits, but it seems more frequently *associated* with dementia præcox than with the other disorders. While we see of course not clearly enough to construct anything like a quantitative scale of defects of endowment, these facts show that dementia præcox develops on a more serious defect

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of constitution than, for example, the neuroses or manic-depressive insanity, and that it stands closer to the hereditary intellectual deficiencies than the other disorders, though we are at present not able to see any direct relation between intellectual and other constitutional defects. Therefore, while the term functional psychosis is one which we had better replace by a wider concept, namely, that of constitutional psychosis, and while we lay then the emphasis on something for which we have a great deal of evidence, we assume in dementia præcox a more marked arrest of development, which mentally shows itself in a much more pronounced defect of adaptation, one which is more frequently in evidence throughout the lives of the individuals than in manic-depressive insanity, for example, and one which may even show itself in certain *organic* evidences of faulty development. It is under these circumstances less incomprehensible that in such cases a readjustment is often no longer possible. In this connection it is interesting to note, however, that when once a certain level of deterioration is reached in dementia præcox, the progression is by no means the rule as is sometimes supposed, and as we are accustomed to find it in the typical organic disorders in which there is a continuation of the cause. That anatomical changes may exist in dementia præcox seems established, but we must admit that they are still very difficult to interpret. What conception we shall form of them, we must leave to the future to decide.

If these arguments are granted to be correct, then we have no reason to disregard the similarities between dementia præcox and the other constitutional psychopathies, or to assume a fundamentally different disease process. Then we must also look upon all these disorders as belonging in one large group. This Moebius has done. He has consistently classed all these conditions, dementia præcox included, in his large group of Entartung. A striking fact within this large group is the existence of transition forms between the various subgroups. This is well known and clearly stated by most writers, so far as the neurosis, manic-depressive insanity, paranoia, the so-called psychoses of degenerates in the narrower sense, or the so-called degenerate personalties are concerned, and upon this fact depends the difficulty of classification. But dementia præcox is excluded, and transitions from dementia præcox to the neuroses, to manic-depressive

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insanity, etc., are denied, although the possibility of such transitions is, in the recent literature at least, seriously discussed. I cannot help feeling that if we look at our cases without prejudice, such transitions from dementia præcox to other constitutional disorders are difficult to deny. Of course we cannot prove this clinically. I can imagine no case in which the claim that such a transition is only apparent can be disproved on clinical grounds. The possibility can be admitted only when we concede the argument that dementia præcox belongs as much to the general group of constitutional Entartung as, for example, manic-depressive insanity and the neuroses.

In the discussion of manic-depressive insanity we shall have to be quite brief. We have seen that what characterizes a considerable proportion of individuals who develop this disease are evidences of exaggerated emotions and a tendency for these emotions to be of the same nature as the psychosis. The results which we have, therefore obtained do not differ markedly from those of many others; perhaps the parallelism between the personality and the psychosis is more evident than is generally believed. This is undoubtedly due to the fact that we have grouped our cases into the *essentially* manic and the *essentially* depressive psychoses. The idea that manic-depressive insanity often represents an increase of a reaction type has repeatedly been expressed and it is further corroborated here. In this disorder also, the constitutional nature is generally admitted. Compared with this evidence, the question whether, in the more marked attacks, the personality is submerged or not, is one which in our formulation of the problem is of minor importance. But I think we are here also accumulating facts which will show that the similarity between manic-depressive insanity and the neuroses may be greater than is usually assumed. The idea is frequently expressed that manic-depressive attacks may represent a sort of organic reaction. The fact that in general paralysis and in Basedow's disease similar conditions are observed suggests this. On the other hand the symptomatology of manic-depressive insanity is essentially that of the normal emotional states, and these latter are reactions to definite situations which, like all other similar reactions, are determined by internal and external *mental* factors. Such a causal relation is, however, often denied in the case of the pathological states. We may here mention an interesting parallelism

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in the problem of anxiety. The anxiety found in neuroses has also been looked upon as an essentially organic reaction, and various determinants have been suggested. It seems to me that the recent studies of Jones and Saif, based upon earlier investigations and formulations of Freud, have shown clearly that the genesis of such attacks of anxiety is in many cases explained by external and internal situations, and that the reaction of anxiety, therefore, preserves, in its pathological states, its essential character as *mental* reaction.

While it has often been impossible to find precipitating mental causes in manic-depressive insanity, a careful search for them, nevertheless, shows that they can be found more frequently than we are led to think on superficial study. This is especially true when we attempt to understand them in their setting, and it is to be expected that further studies will bring us more and more data to show the *mental* forces at work in this disease.

What we desired to show in this brief discussion, in which only the main points could be touched, is, then, the frequency and the importance of abnormal manifestations in patients who later develop manic-depressive insanity and dementia præcox, and to point out the fact that the symptomatology of these manifestations has much in common with that of the psychosis. The same is found in the neuroses. These peculiar traits of the personality are more frequent in cases which develop the graver disorders, which we call dementia præcox, than in those which break down with the more benign manic-depressive attacks. In interpreting the facts it appeared to us that there is enough reason to regard the relationship of personality and psychosis, even in the case of dementia præcox, from the point of view of faulty development or of defects of adaptation, in other words, as dependent upon a defective Anlage, which often shows itself in definite symptoms throughout life. Therefore, both the pathological personality, with its milder manifestations; and the psychosis, with its more complete break of compensation, may be looked upon as determined by constitutional factors, in the sense that when demands for adaptation arise the individual is found unfit to meet them, unfit through inherent weakness, but also at times, to quite an extent, through false attitudes which have developed through lack of proper training. In this last direction lies our hope for modifying these defects.

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THE PERSONAL FACTOR IN ASSOCIATION REACTIONS.*

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On the outpost line of dynamic psychology are the group of association experiments. There are no others which rank with them in their closeness of contact with the essential features of the personality. For this reason, perhaps, they have also been a good touchstone of the psychological attitude of their investigators. It is a far cry from Bühler to Jung; from the pale blue of Wirth's *Archiv* to the crimson of Brodmann's *Journal*. Here we bespeak a clear field for our experimental methods as, in aiding the comprehension of our cases, they meet the test of concrete experience.

From all angles of normal psychology, the greater share of attention has gone to the tests of controlled association. Regarded essentially as intelligence tests, they have been constructed with a rather exclusive view to this function. In general, the psychological test of intelligence are incomparably more developed than those of any other sphere; many of them are difficult to pick flaws in, as tests of intelligence. Why then should they fail when put to the test of concrete experience? For one reason that they restrict themselves to a function whose importance for adaptation to life is overestimated in the conventional teachings of psychology. As intelligence tests, they measure speed, complexity and retentivity in the processes of acquiring ideas. Useful attributes all, but not of the kind that necessarily contribute to mental balance. These qualities are of advantage to the personality only as they are made effective in terms of action.

Such proper organic adaptation to the environment regularly demands some sort of outward reaction upon it. If the personality is to maintain itself in the external world, the behavior, with its mental concomitants, must be properly adjusted to the reality

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of that external world. This is the foundation of all healthy reaction types, mental or otherwise. There exists, however, another guiding principle in mental behavior, directing it not with reference to the external world, but back again upon the personality itself. In their broadest sense, these phenomena include those summed up by Professor Bleuler in the invaluable conception of autism. At its deepest level, this represents a thorough exclusion of and withdrawal from the environment that seems to exist in dementia præcox. At a less profound level it appears in ruminations and daydreams where imagination is called on for what is lacking in reality. At the most superficial level it is seen in an exaggeration of the egocentric element in mental reaction, a tendency to elaborate situations in especially personal reference, dominated by subjective factors of pleasantness and unpleasantness that overshadow those of objective, logical, rational value. Plainly here is a tendency that holds out many prospects of difficulty in adaptation to life. It is closely bound up with another, the adequacy and proper coordination, call it discipline, if you will, of the emotional reactions. Not only in dementia præcox have we to reckon with ataxia of noopsyche and thymopsyche, but as a widespread factor predisposing to difficulties of adjustment in all personalities it affects. Feeling is the arch-disturber of psychic balance—Pathé is the twin sister of Eris.

Thus then are the great potential obstacles to mental adaptation. Our concrete issue is to consider how they are likely to influence the mental trend as it can be studied through association experiments.

Experimental inquiry into these questions is now dominated by the free association experiment. As a scientific instrument it is necessary to consider it quantitatively all along the line, and the favorable situation in this respect is essentially due to the light thrown upon it from psychopathological sources.

The simplest aspect of the relation of stimulus and response in these experiments is the reaction time;[1] and its first noteworthy property is that it is longer than the reaction time of many controlled associations. One can often name the opposites of simple adjectives more promptly than one can name the first idea they

[1] Some Properties of the Free Association Time, Psychol. Rev. 18, 1911, pp. 1-23.

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arouse. This indicates a change in the conditions introduced by the latter procedure, which imposes difficulties, hesitations, obstructions, resistances, that are absent in the former. The analysis of these difficulties is the problem of the free association time.

It is not an index of the speed of the *thought-processes,* but of a certain external reaction, not so much an intellectual measure as the controlled association tests, and more of a volitional one. Not necessarily the speed with which a response is found, but the freedom with which it is uttered.

Broadly speaking, the median reaction time of such experiments is about two seconds, the times are seldom shorter than one, and range to infinity, when there is a failure of response; but in spite of this great unreliability of single observations, it is found that different people do have measurable differences in this association time, of the promptness with which the responses appear.[1] The median measures of different persons range from a second and a half to four seconds. The most important point of individual difference is the extent to which the measures above the median depart from it, for this is the most direct index of the amount of obstruction to response that the subject shows.

This would be roughly given in the difference between the median and the average; and it was thus that Jung came to suggest this ratio as a coefficient of the subject's emotivity. It is in its relation to the emotional reactions that the association time touches upon our fundamental questions. Accordingly the greatest tendency to emotional reaction would be shown in those subjects in whom the difference was greatest. But this is true only if the emotional reaction is a very dominant factor in lengthening the time, and that is not the case. Nor is it true that the time is lengthened in any close proportion to the emotional reaction. That part of the difficulty in response which is the product of special emotional reaction must be determined by procedures which control the other factors, as ideational type.

Under the conditions of the writer's observations a very commensurable group of fifteen women and ten men showed a division of the women into two groups, half responding some-

[1] The Question of Association Types. Psychol. Rev. 19, 1912, *esp.* pp. 255-257.

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what more promptly than the men, half distinctly slower.[3] The person having the best available knowledge of those subjects, one also of good experience and exceptional balance, was questioned concerning differences in personality between these two groups; a distinct cleavage appeared, with one or two equally distinct exceptions, differentiating the two groups on the basis of a quality whose best one word rendering is *depth*. The group exceeding in this quality is the group of the longer reaction times. This might, and probably does, bear out the emotional interpretation; but has to reckon with the further fact that those of this group were much better in the performance of official duty, and have during the years since these experiments made much the better success of life. One must be prepared to meet such sharp reminders that mental balance is not a function of independent qualities, but one of their interplay.

On the whole, less practical attention can justly be paid to the association time now than formerly. Its relations to the emotional sphere are too equivocal, and for individual observations it has not proved the best of *Komplexmerkmale*, either in the Zurich work, or in the writer's.[4] Extra-conscious emotions are sometimes called on to explain lengthened times, but to do this with justice it is necessary to show that the correlation of the different *Komplexmerkmale* with each other is closer than their correlation with the introspection. I know only one series of observations on this point, which was negative.[5]

A better insight into the relation of the personality to these experimental reaction types is obtained through studying the responses on the basis of their content. The experiment is to be observed in its relation to egocentricity and to emotional reaction; first is to be measured the degree to which the responses represent a personal reaction to the stimuli. At the time when the original progress in this direction was made, the problem was not so clear as it is now, and there was a tendency towards the grammatical view-point in dealing with the responses that was often confusing psychologically. The scheme did, however, bring out the

[3] Some Properties of the Free Association Time. Psychol. Rev. 18, 1911, *esp.* p. 5.

[4] Wells and Forbes, On Certain Electrical Processes, etc. Arch. of Psychol. 16, *esp.* pp. 34-35.

[5] *Ibid, esp.* p. 35.

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central fact of a group of associations having more subjectively experiential character, namely the predicate group, with its intimate congener, the *Konstellationstypus;* and it was found that opposed to records of this class were others in which the type was more objective or concrete. There is an entire continuum between individuals of these different reaction types; it is doubtful if they even form separate species. Since the essential difference was, however, in Jung's own words, that of "subjectiver Weise der Auffassung," it was desirable not to restrict its conception to the predicate category, but rather to include all types of association in which special egocentricity of reaction was indicated. Furthermore, the ambiguities in the detail of the original system were repeatedly pointed out; and for objective treatment of the test it became quite necessary to give up such unreliable distinctions. For present purposes, the proper evaluation of the test is in terms of its egocentricity and this is best served in the formulation of an *egocentric* category of responses as opposed to a *concrete* one; though in the latter group a few distinctions, as of opposite and supraordinate responses are still conveniently preserved.[6] The relation of these two major groups of responses constitutes the dynamic essence of the experiment.

I will not harrow you with mathematical detail, but there is no reason to doubt that this broad separation of concrete and egocentric associational categories is satisfactorily accomplished.[7] It was, in fact, possible to submit it to a very rigid objective test. We are fortunate in having in the English language a definite standard of normality for a special material, along the precise lines here indicated. How personal is an associative response is naturally measured by how individual it is to the particular person; and this we know to the limit of a thousand individuals, as determined by Kent and Rosanoff. Correlating the results of two separate series of experiments, evaluated by the two methods, the Pearson coefficients in each case approximated 74 per cent,

[6] A Preliminary note on the Categories of Association Reactions, Psychol. Rev. 18, 1911, pp. 229-233.

[7] The Question of Association Types, Psychol. Rev. 19, 1912, pp. 253-270. Cf. also Fürst, Statistische Untersuchungen über Wortassoziationen und über familiäre Uebereinstimmung im Reaktionstypus bei Ungebildeten. Journ. f. Psychol. u. Neurol. 9, 1907, 243-278.

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differing by only .3 of 1 per cent; and this relationship had to be calculated on the basis of the original predicate category; it would be distinctly closer under the present formulation of the egocentric.[8]

Dynamically therefore, these two methods of dealing with the free association experiment represent the same thing. We may discuss the data now from one, now from the other standpoint. The advantage of the latter is its strict objectivity; of the former that it is available in long and diverse series of stimulus words, which renders it more applicable to the study of changes in reaction type, whether the result of practice,[9] emotional incidents (Tatbestandsdiagnostik) or the course of mental disease.

The influence of education upon the reaction type has usually been formulated in terms of internal and external associations. This distinction is very dependent on the personal equation of the investigator, but there has been substantial agreement that education favors a more external association type, which roughly corresponds to a more concrete one. On the other hand, the predicate category tends to be more numerous in Jung's educated subjects, and the recent and more objective evidence adduced by Kent and Rosanoff is that the individuality of response is very distinctly greater in the educated. But all such findings are true only of averages from many subjects, between whom there is such great individual difference that this criterion can readily be proved of little or no significance in judging educational status beyond quite low levels. It is just this independence of education that gives the experiment its value in relation to things more important than education in it present conception.

In the persons observed by the writer a more definite line of cleavage appears between the men and women. The greater affective sensibility of women postulated as a fundamental difference shows itself, quite as one would expect, in a greater frequency of egocentric, personal types of response. This is true whether one considers the responses along Aschaffenburg-Jung-Riklin lines, or by the frequency tables of Kent and Rosanoff. These investigators do not, it is true, report so marked a difference as is here found, but this may well be due to the less evolved

[8] *Ibid., esp.* p. 268.

[9] Practice Effects in Free Association. Am. J. Psychol. 22, 1911, pp. 1-13.

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methods of treatment employed in the more groundbreaking researches. While there are always marked individual differences, yet the grouping here is so distinct that not one in ten of the men has more predicate reactions than the average of the women, and but one in six[10] a greater individuality of response.

But such group differences are important only as they make clearer the meaning of the reaction type in the individual case. That there are inherent differences of association type between various persons is quantitatively determined. What are the features in personality of which the association type is the expression? Sometimes they are strikingly clear; as exquisite a character-sketch as I have seen was once made by the speaker whom I have the honor to follow, from two records of the Kent-Rosanoff experiment, about an individual he had never met. To deal adequately with the question requires independent and comparative accounts of personality and measurements of association type. To this end is an effort to review my original data—the data that suggested this problem—and to learn how far the personalities of the subjects, as reflected in the best available common source of information, are related to characteristics of association type.

The most accurate determinations of association type at hand[11] consist of reactions by six subjects to 1000 different stimulus words each, and of two subjects to 500 each. The situation here shows three subjects high in the scale of egocentricity, the remaining five having about half as much tendency in this direction. We may designate the subjects by the alphabetical letters A, B, C, etc. The three egocentric types are A, D and G. The best available informant as above, not a psychologist, considers the subjects in relation to a complex of characters, to be summed up, according to the issues previously formulated, as conscientiousness, sense of responsibility, self-consciousness, depth of emotional life, tendency towards idealization as opposed to matter of factness. Taking the best-defined personality G, as the starting point, it is questioned which of the entire group resembles this subject most. No great resemblance appears at first sight, but the final judgment is A. They are much the closest in experimental type. As to who resembles G most with A excluded, the judgment

[10] The Question of Association Types, Psychol. Rev. 19, 1912, *esp.* p. 259.
[11] *Ibid., esp.* p. 265. The subjects are not designated by the same letters.

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is pretty decided on D, as is again the case in experimental type. In the writer's judgment, subject of course to distortion by knowledge of the experiments, the personality of G represents considerable subjective difficulties, extremely well dealt with; in A and D the difficulties are not so acute, but not so well managed. In further question of the subject resembling G the least, subject C is promptly selected, who combines a very objective type of association with very short reaction times. But inquiry whether the remaining subjects more resemble C or A, D and G brings the judgment that they more resemble A, D and G, whereas in association type they more resemble C. Also contrary to the present treatment of the experiments, subject D seems to the writer to more closely resemble G than A does.

Analogous data were sought for subjects in Kent-Rosanoff experiments.[22] Eight subjects are also involved here, but only A, D and G are the same as before, the others different persons. For these three subjects the results are in accord with those spoken of above. The question of the ways in which A and G most resemble each other brings the judgment of special similarity in "temperament," refinement, conscientiousness. The most important difference seems to be that A's judgment is much inferior to G's. These are, of course, the subjects highest in the scale of egocentricity. The two subjects showing responses of most usual character are next considered; it appears that a difference lies between them in that more self-confidence enables the one to do better work. The question of how these two subjects, J and L, the most objective experimental types, differ from A and G, the most egocentric types, brings the quick reply that they are "an entirely different type" of person, but no topics are elaborated, it "does not seem as though they had had the same bringing up." Almost midway in the scale of Kent-Rosanoff usualness in response is subject K. As this subject was otherwise known to have an exceptionally good personality, inquiry was made as to points of difference from A and G, and from J and L. In respect to the complex of qualities above named, this subject was thought to resemble A and G the more, as is most decidedly the case in association type, when it is considered by Aschaffenburg-Jung-Riklin methods. In Kent-Rosanoff treatment the

[22] *Ibid., esp.* p. 259.

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position is as noted about midway, though slightly nearer A and G. The main difference from A and G is thought to lie in a lesser emotional depth. With respect to the quality-complex, the three middle subjects of the group, K, M and N, also resemble each other more closely than they do those at the usual end, J and L, or those at the egocentric end, A and G.

It would seem scarcely just to make no mention in this connection of a series of specially designed supplementary experiments, though their data are too recently gathered to permit description of other than their most general features. The individuals concerned were selected for temperamental relationship to C, an extreme objective type, or to G, an extreme egocentric type, by a third person; the writer being slightly acquainted with but one of them, and not knowing what group they were supposed to represent until the experiments had been evaluated. There has yet to be observed a case of the G personality whose association type is not above the average in respect to both individuality of response and the proportions of the egocentric category. On the other hand there are mechanisms which may produce in a C personality a reaction to the experiment very similar to the G type, by present methods of evaluation. It is only too certain that frequency of response by the Kent-Rosanoff tables does not express the affective differences in the two types. Affectively determined responses are naturally individualized, and fall into the egocentric category; but it is not conversely true that this type of reaction is necessarily, or perhaps even usually, of affective implication. We have simply not yet learned to distinguish objectively two kinds of egocentric responses that represent fundamental differences in the personalities to which they attach. A low individuality of response, with a low proportion of egocentric reactions, have hitherto been found in personalities of more superficial affective life; but the opposite association type has been observed in individuals of both extremes.

Careful introspection, a renewed attempt at further analysis of the egocentric category, the galvanometer and its congeners, control experiments from other mental fields—all are at hand to aid in clearing up this situation. Before us is the issue of the experimental study of personality through the stream of thought as given in the association procedures. Also the general direction

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in which the issue seems most likely to lead. And if the problem is one of exceptional difficulties, there are few indeed towards which we can direct such perfected engines of attack.

Those who indict these pages with the high treason of teleology, I have but to remind that the criterion of science is one of method rather than of Fragestellung, and again that the special method under discussion yields to few psychological procedures as a quantitative instrument. The science that undertakes the study of any class of natural phenomena is responsible for the problems of those phenomena in relation to human life. Neither the physicist, nor the chemist, nor the pathologist evade them; and it is for us to determine that psychology be not forever dominated by a complex of futility. The psychologist who would square his work with the test of concrete experience must rally to other standards, such as are raised by my own teacher, Cattell, and here, by Watson. With the utmost satisfaction therefore, let every psychologist to whom there is value in progressive interaction with liberal psychiatric thought, contemplate the auspicious circumstances that have brought us together.

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A STUDY OF THE NEUROPATHIC INHERITANCE.*

By F. W. MOTT, M. D., F. R. S., F. R. C. P.,

Pathologist to the London County Asylums and Director of the Pathological Laboratory; Senior Physician, Charing Cross Hospital.

Mr. President: Permit me, on behalf of myself and my fellow British workers in psychiatry, to thank you for the great honor of being asked to give an address at the opening of the Phipps Psychiatric Clinic; an institution destined in the future to add new laurels to the medical faculty of this great university, which has obtained a foremost place in the world of medical science by spreading the light of research by its distinguished professors to all parts of the new world, and even by vivifying the medical faculty of an ancient university.

When your distinguished director, Dr. Meyer, wrote to me asking the subject of my address, I replied "A Study of the Neuropathic Inheritance, Especially in Relation to Insanity." The reason why I chose this subject is because for the past four years I have been engaged in the study of the relation of heredity to insanity. I feel that the subject is one which still requires an enormous amount of patient investigation before any definite conclusions can be arrived at, and the more I am convinced of the wisdom of following the advice of Bacon in his "Advancement of Learning, Divine and Human," when he says: "First, therefore, in this, as in all things that are practical, we ought to cast up our account, what is in our power, and what not; for the one may be dealt with by way of *alteration* and the other by way of *application*. The husbandman cannot command either the nature of the earth nor the seasons of the weather; no more can the physician the constitution of his patient, nor the variety of accidents; so, in the culture and cure of the mind of man, two things are without our command—points of nature and points of fortune."

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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Investigation of Relatives in the London County Asylums.

Four years ago I initiated a card system of relatives who are at present or who have been in the London County Asylums; the reason for doing so was to collect material for ascertaining resemblances in the convolutional pattern of the hemispheres in the brains of related persons. A large number of brains have now been collected and we are gradually duplicating these. Dr. Edgar Schuster has carefully examined and reported on the brains of a mother and daughter and of two brothers. His long and valuable communication, embodying careful measurements of the fissures and drawings to illustrate the facts, will be published in the next volume of the archives of my laboratory. He has demonstrated that many points of similarity exist, showing that the organ of mind has an hereditary physiognomy, as had been previously shown by Karplus, with the brains of infants. When a large number of these brains are duplicated some interesting results may be anticipated.

From a few hundred cases at the commencement of my enquiry, the list has now increased to nearly 3500 cases. Each card states the patient's name, age, age at first attack, age on admission to particular asylum, and nature of mental disease. Males have a blue card, females a buff card, and there is one for each insane relative in a fraternity or family, and the name of each insane relative of the fraternity or family is entered with all particulars on each card. The cards are sent to the various asylums to be filled in with any further information that can be obtained.

If the organization of this system has done nothing else it has stimulated interest in the subject of heredity in relation to insanity, and the Asylums Committee were much impressed when they heard that at the present time there are resident in the London County Asylums over 1500 relatives or persons who were related to one another or who had had relations previously in the asylums. Still more were they impressed by the fact that there are about 730 persons so closely related as parents and offspring, brothers and sisters, at the present time in the London County Asylums. *A priori*: this, to my mind, is striking proof of the importance of heredity in relation to insanity, for we cannot suppose that

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20,000 people out of the four and a half millions in the county of London brought together from some random cause would show such a large number closely related as 3.6 per cent.

The committee invited me to give a lecture before the County Council on the subject of heredity in relation to insanity. I was glad to do this, because I knew that if the medical officers saw that the committee were interested in this subject they would be impressed with the fact that it would be to their advantage to assist in the work. So I have been able to collect a number of pedigrees on a system which I shall shortly explain, obtained for me by the medical officers in some of the asylums.

The information necessary to construct these pedigrees was obtained from the friends who visited the patients, but they have been supplemented by further investigation by myself or my own assistants; and as far as possible every endeavor has been made to make as complete a record as possible for three or more generations; for I recognize the fact that it is far more important to obtain a few complete pedigrees than a number of incomplete ones.

The method of selecting cases for enquiry has been such as to avoid, if possible, any undue preference being given to any hypothesis or propaganda. The cases have been chosen because the friends were intelligent, numerous, and able and willing to give as complete an account as possible of the members of the stocks.

Before I refer to the results obtained by these investigations let me call your attention first to some of the statistical results obtained by the card system; and I hope to show, later, that the principal facts deduced from the statistics are supported in every way by the results obtained by the analyses of the pedigrees.

I soon recognized that the records in the case books referring to the diagnosis of the form of insanity at the various asylums at different periods of time would form unreliable data for the following reasons: (1) The personal equation of the medical officers; (2) the different classifications of insanity and nomenclature adopted in different asylums at different periods of their existence; (3) the change in the diagnosis after admission. Consequently I have only placed reliance on such well recognized conditions as epilepsy and general paralysis of the insane concerning

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which the personal equation cannot greatly affect the diagnosis, particularly in relation to the latter, in which the diagnosis is, in the great majority of cases, controlled by postmortem examination. I judged that the personal equation, however, could not materially vitiate the data referring to the age at first attack, discharge from asylum, death, and recurrence of attacks as shown by dates of readmissions.

My statistical observations by the card system of relatives, therefore, mainly relate to the collection and analysis of those data which the personal equation does not materially affect. A criticism has been made that in days gone by fewer people who were insane were admitted to asylums and this factor would affect the age of first attack of parents and grandparents more than their offspring. The main bulk of the cards, however, refer to parents and offspring admitted to the asylums within the last 15 years, and I shall give other reasons why this does not materially affect the results.

ANALYSIS OF 3485 RELATED CASES (INSTANCES OF TWO OF A FAMILY INSANE).

	Pairs.	Cases.
Mother and daughter	174	348
Mother and son	108	216
Father and daughter	112	224
Father and son	83	166
Brothers and sisters	241	482
Two sisters	227	454
Two brothers	150	300
Husband and wife	76	152
Offspring and grandparents	29	58
Other relationships, collaterals, etc.	224	448
Total	1424	2848

160	instances of	3	of a family	insane		480
27	"	" 4	"	"		108
6	"	" 5	"	"		30
2	"	" 6	"	"		12
1	"	" 7	"	"		7
Total						3485

Total, 3485 cases made up from 1620 families.

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They show the following facts:

(1) In the insane offspring of insane parents daughters are much more numerous than sons.

(2) Amongst insane members of the same family (brothers and sisters) sisters are more numerous than brothers.

This may be correlated with the fact that more women are in the asylums than men. About one-half of the people in the London asylums at the present time have, according to an admirably lucid report of the clerk to the Asylums Committee, been resident more than ten years. The silting up in the London asylums at the rate of 125 to 200 per annum is largely due to women. There are several causes for this: the recoveries in women do not bear the same proportion as in men; general paralysis, which is a fatal disease, is at least four times more frequent in men than in women. Now, why should women be more liable to become insane than men? I will briefly summarize the causes which, in my opinion, are operative:

The physiological emergencies connected with reproduction, *i. e.*, the menstrual periods, child-bearing, and the cessation of the period of reproduction, the climacterium; moreover, there is an inborn more unstable mental equilibrium in women. I would also add as an important, and perhaps the only, cause in many instances—the enforced suppression by modern social conditions of the reproductive functions and the maternal instincts in women of an inborn emotional temperament and mental instability.

Anticipation or Antedating.

Dr. Maudsley has observed that nature tends to mend or end a degenerate stock. Now, how could nature best end or mend a degenerate stock? By segregating in a relatively few germs all the unsound elements, leaving the others free—as it were, a crystallization out of the diseased elements. What would this do? you may ask. Well, it would make some of the offspring so weak by intensifying the disease and bringing it on at an earlier age that they would, if left to nature's process of elimination, be killed off early, or unfitted for propagation by being brought into the asylums at adolescence. This was termed by Darwin "antedating" or "anticipation," and I have found that there is

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a signal tendency in the insane offspring of insane parents for the insanity to occur at an earlier age and in a more intense form in a large proportion of cases; for the form of insanity is usually congenital imbecility, epilepsy, adolescent insanity or the primary dementia of adolescence, which is generally an incurable disease. This is statistically shown in the figures regarding the age at the time of first attack in the insane offspring of insane parents. You will observe that nearly 50 per cent of these insane offspring had their first attack of insanity at or before the age of 25, and whereas in the case of the insane parents advancing age apparently brings greater liability to insanity, in the case of offspring, with advancing age the liability to insanity tends rapidly to diminish. Now besides the fact that this shows nature's method of eliminating unsound elements of a stock, it has another important bearing, for it shows that after the age of 25 there is a greatly decreasing liability of the offspring of insane parents to become insane, and therefore on the question of advising marriage of the offspring of an insane parent this is of great importance. Sir George Savage recently said in his presidential address to the "Psychiatrical Section of the Royal Society of Medicine" that this statistical proof of mine accorded with his own experience, and that if an individual who had such an hereditary taint had passed the age of 25, and never previously shown any signs, he would probably be free, and he would offer no objection to marriage.

Pedigrees and statistical data relating to antedating appear to show an intensification and anticipation by a coalescence or crystallization out of the unsound germinal determinants into a few of the offspring, leaving the germ plasm of the others free. This would not only purify the stock by segregation, but the diseased offspring would be unfit for the struggle for existence and propagation. In putting forward this theory of coalescence of similar diseased germinal determinants, I may mention in support of it a statement made by Galton in his great work on natural inheritance. "In the process of transmission by inheritance elements derived from the same ancestor are apt to appear in large groups, just as if they had clung together in the pre-embryonic stage, as perhaps they did."

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Statistical Data Relating to Inheritance and Insanity, Especially in Relation to Anticipation.

From an investigation of the age at the time of first attack in 508 pairs of parent and offspring (from the records of 464 insane parents of 500 insane offspring) the following table has been compiled. The figures denote the percentage of cases whose first attack occurred within the given age-periods.

Age-periods.	Father.	Offspring.	Mother.	Offspring.	
Under 20 years	1.4	26.2	0.6	27.8	
20-24 "	0.4	18.0	3.4	15.7	Adolescence.
25-29 "	1.4	18.0	4.4	18.2	Adolescence.
30-34 "	9.6	13.0	7.8	13.4	
35-39 "	11.5	7.3	9.2	10.0	
40-44 "	9.2	6.4	10.3	5.8	
45-49 "	14.3	6.0	12.0	3.7	Involutional period.
50-54 "	17.5	0.9	12.3	2.4	Involutional period.
55-59 "	13.8	3.7	14.0	1.7	Involutional period.
60-64 "	10.1	—	11.6	1.3	Involutional period.
65-69 "	5.0	—	8.8	—	
70-74 "	4.6	0.4	3.1	—	
75-79 "	0.4	—	1.3	—	
80 "	0.4	—	0.6	—	

These figures are shown graphically in the following diagram (Fig. I), the abscissæ representing the age-periods and the ordinates the percentage of cases whose age at the time of first attack falls within the given periods. They clearly show the signal tendency to the occurrence of most of the insanity in the offspring of insane parents at a much earlier age than in the parent; that is to say, antedating or anticipation is the rule.

Investigating the ages at the time of first attack in the insane offspring of insane parents, I find in the following pairs that 239, or 47.8 per cent, out of 500 offspring had their first attack at or before the age of 25:

Mother—son	51	out of 118	offspring.
Mother—daughter	81	" 170	"
Father—son	45	" 90	"
Father—daughter	62	" 122	"
Total	239	out of 500	offspring = 47.8 per cent.

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The following table shows the average age at the time of first attack in the parent and offspring:

	Parent.	Offspring.
120 pairs mother—daughter	49.7	29.3
67 " mother—son	50.2	30.7
76 " father—daughter	50.1	30.4
51 " father—son	51.9	33.1
79 parents, 133 offspring in families with more than two insane.....	47.7	28.7
Total: 393 parents, 427 offspring...	49.7	30.0

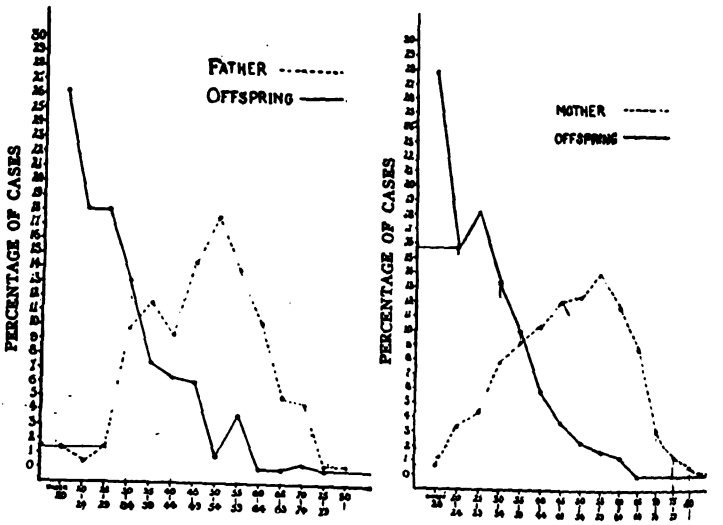

FIG. I.

A comparison of these two curves shows a notable difference in the dotted line curves of the two parents. The curve of the mothers rises steadily and progressively from 20—55. The curve of the fathers does not commence to rise till after 25; there is a small peak at 35—39. This is the period when general paralysis is most likely to occur. But the main difference in the curves of fathers and mothers is due to the incidence of child-bearing, which causes the steady rise to the climacterium in the maternal curve.

In addition there were 71 parents whose average age was 49 at the time of first attack who were associated with imbecile offspring.

Lastly, I find that in 299, or 59.8 per cent, of the 508 pairs of insane parent and offspring, the first attack in the offspring occurred at an age 20 or more years earlier than in the parent; of these 299 instances 73 of the offspring were imbeciles.

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Prof. Karl Pearson, writing to Nature November 21, 1912, "On an Apparent Fallacy in the Statistical Treatment of 'Antedating' in the Inheritance of Pathological Conditions," criticises on mathematical grounds the evidence of anticipation. I do not feel myself competent to reply to the opinion of such an eminent authority on mathematics applied to biometrics, but it does not militate against my conclusions nor explain away the fact that

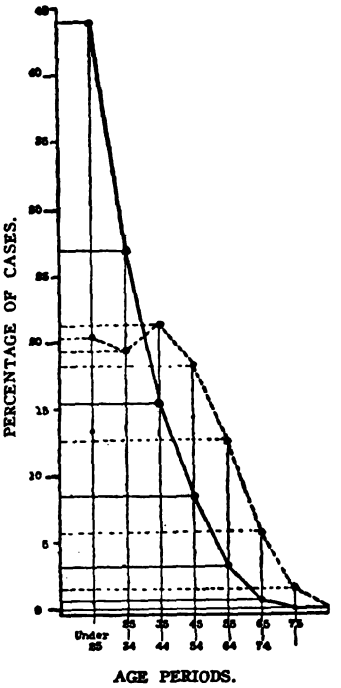

FIG. II.

a large proportion of the insane offspring of insane parents are affected with imbecility or adolescent insanity, for, granting the assumption that there is no antedating at all, we might rightly expect the ages at onset of the insane offspring of insane parents to be comparable with the ages at onset of all the admissions to the asylums during the same period. This is by no means the case, for amongst the insane offspring there is a far greater proportion affected in early life, as is shown by the following figures and curves.

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PERCENTAGE COMPARISON OF THE AGE AT THE TIME OF ONSET OF INSANITY IN THE INSANE OFFSPRING OF INSANE PARENTS, AND THE GENERAL ADMISSIONS TO THE LONDON COUNTY ASYLUMS.

Age.	Males.		Females.		Total.	
	4482 direct admissions during last four years.	274 insane offspring of insane parents.	5097 direct admissions during last four years.	389 insane offspring of insane parents.	9579 direct admissions during last four years.	663 insane offspring of insane parents.
Years.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Under 25...	20.0	43.8	20.2	44.2	20.1	44.0
25 to 35.....	19.9	27.7	19.9	28.0	19.9	27.9
35 to 44.....	21.9	13.8	21.5	16.7	21.7	15.5
45 to 54.....	17.7	10.2	18.6	7.4	18.2	8.5
55 to 64.....	13.3	3.6	12.4	2.8	12.7	3.2
65 to 74.....	5.7	0.7	5.9	0.8	5.8	0.7
75.....	1.5	....	1.6	....	1.5	....

41 male imbeciles out of 274 offspring; 54 female imbeciles out of 389 offspring; 95 male and female imbeciles out of 663 offspring.

The following points are indicated upon examination of these tables:

1. The average age incidence of male and female general admissions for each decade is almost identical. This seems to show that the larger number of females in our asylums is due to accumulation and probably may in great measure be correlated with the fact that the death-rate of males from general paralysis is nearly eight times as great as that of females.

2. The female offspring of insane parents show a slightly greater incidence early in life than the male, the most marked difference being in the early involutional period, 35-44 years.

3. Taking the total offspring, the male and female separately, there is a far greater incidence of insanity early in life especially under the age of 25 years; and of the 663 insane offspring of insane parents examined 95 or one-seventh were imbeciles.

I may say that the examination of pedigrees first led me to regard antedating as nature's method for eliminating the unfit, and the pedigrees, which are numerous, that I have since obtained, all strengthen the opinion. I hope shortly to publish a large number of these pedigrees and further elaborated statistics on the question of antedating, obtained from a further collection of data since the above figures were obtained.

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Prof. Pearson in one way does not deny the fact that there is a tendency for an insane stock to be either ended or mended, which is really an important practical point we have to decide, for he says: "In the case of insanity, is the man or woman who develops insanity at an early age as likely to become a parent as one who develops it at a later age? I think there is not a doubt as to the answer to be given; those who become insane before 25, even if they recover, are far less likely to become parents than those who become insane at later ages; many, indeed, of them, considering the high death-rate of the insane, will die before they could become parents of families."

Mr. Nettleship has shown that antedating occurs in other diseases, notably diabetes, and it was he who called my attention to the probability of my being able to show antedating in insanity, because I remarked that I seldom found insanity occurring in pedigrees beyond three generations; there was a tendency to elimination of the unsound members by early death.

Erasmus Darwin, the grandfather of Chas. Darwin and Francis Galton, said: "As many families become gradually extinct by consumption, epilepsy, mania, it is often hazardous to marry an heiress, as she is often the last of a diseased family." In a letter to the father of Chas. Darwin, probably prompted by the fact that one of his sons committed suicide, he wrote: "I know many families who had insanity on one side, and the children, now old people, have had no sign of it. If it were otherwise there would not be a family in the kingdom without epileptic, gouty or insane people in it." Francis Galton, his other distinguished grandson by his second wife, established the law of filial regression, or the tendency continually operating to re-establish the normal average of the race. It is remarkable how this progenitor of our two greatest biologists anticipated the epoch-making discoveries of his illustrious grandsons.

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Pedigrees Showing Anticipation.

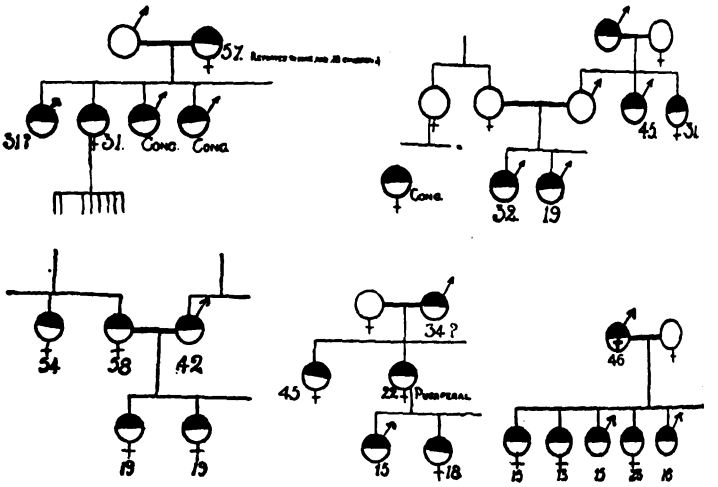

Fig. III.

The above pedigrees illustrate extreme cases of hereditary transmission of the neuropathic taint. These with Figs. IV, XVII, XX represent the instances of five to seven members of a family being at one time or another resident in the London County Asylums.

They illustrate "antedating"; the insanity of the offspring is shown to occur at a much earlier age than in the parents.

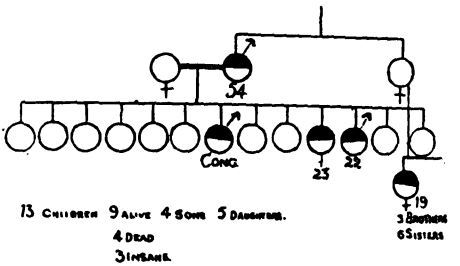

Fig. IV.

A. B——, an alien Jew, aged 54, was admitted to an asylum for the first time suffering with involutional melancholia; he has a sister who has not been in an asylum, but, as events turned out, bore the latent seeds of insanity. The man is married to a healthy woman who bore him a large family; the first five are quite healthy, then comes a congenital imbecile epileptic (cong.), then two healthy children, followed by a daughter who becomes insane at 23, then a son insane at 22, and lastly, two children who are up to the present free from any taint. The sister of A. B—— is married, and has a family of ten, seven girls and three boys; one of the females was admitted to the asylum at the age of 19, and since this pedigree was constructed a brother of hers has been admitted, aged 24. Half-black circles are insane. This pedigree is instructive; it shows direct and collateral heredity; it also shows remarkably well the signal tendency to the occurrence of insanity at an early age in the children of an insane and potentially insane parent.

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Each pedigree is a study in itself and therefore any endeavor to frame statistics regarding the influence of a particular inheritance may be full of fallacies; nevertheless, I have endeavored to frame statistics from a number of pedigrees which have been collected; naturally these pedigrees are of unequal value and

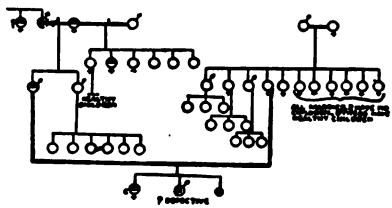

FIG. V.

This pedigree commences with an insane woman who first marries an apparently healthy man, and of their six children one becomes insane. She next marries a drunkard whose sister is reported to be insane. The result of this marriage was a weak-minded son, who came into the asylum at 42 years of age, and an apparently normal son, who marries and has healthy children. The insane son married a woman coming from a good stock, with the result that their firstborn daughter is an imbecile, and the second born, a son, is mentally defective.

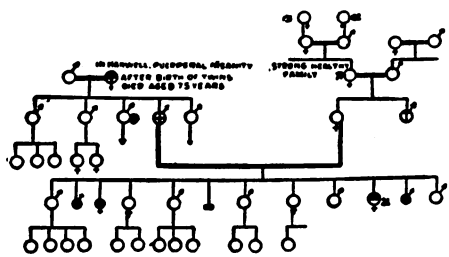

FIG. VI.

In the above pedigree is shown the mating of a female descendant of a strong, healthy family with longevity to the drunken son of a drunken mother, who also had an attack of puerperal insanity. Of the children from this marriage three died young; *the one affected member became insane in adolescence and has died of tuberculosis in the asylum* (half-black circle), whilst the remainder are apparently healthy, and those who are married have healthy children.

therefore the results can only be regarded as purely approximative. Still, admitting these fallacies, they may serve as a general indication regarding probability of transmission of insane inheritance. The much greater incidence when there is a dual inheritance over a single inheritance is quite in accordance with ex-

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pectations, but many pedigrees which I shall show, or I have already shown, prove that this is by no means invariably so in every individual case. Again, in the comparison of insanity in the offspring where there is direct or collateral inheritance, the statistics accord with expectations, but here again many pedigrees

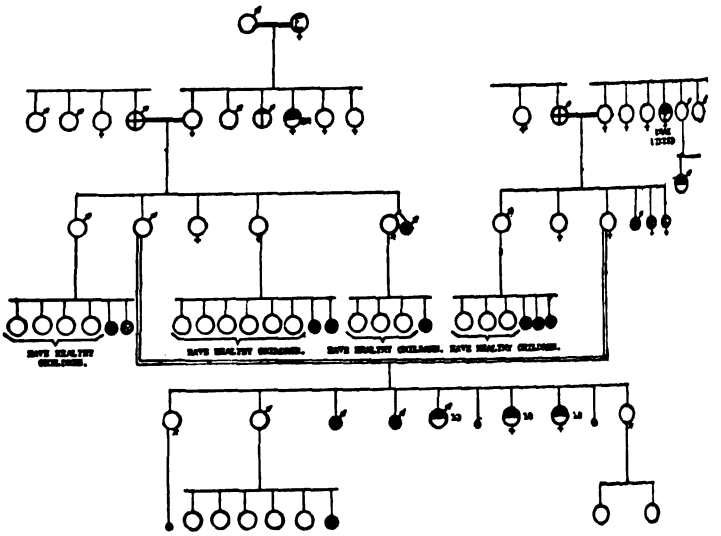

FIG. VII.

Pedigree of 5 generations relating to 3 patients, two sisters and a brother admitted to Hanwell suffering with dementia præcox; onset of all three was approximately 18; they are still in the asylum. All the other living members have been seen and are quite normal.

The eldest married; had only one miscarriage. The eldest son has six children, 5 living, some grown up and normal. The youngest daughter married and has two normal children, aged 4 and 2 years.

The father and mother were both life abstainers. The father's cotraternity and their offspring are quite normal, but on his father's side there is a history of drink and on his mother's collateral insanity and epilepsy in the grandmother. On the mother's side, in her generation, there is no insanity or epilepsy but her father was an alcoholic, and on her mother's side there was collateral insanity.

It seems that the mating of these two potentially unsound stocks intensified the neuropathic taint which revealed itself in an active form in these cases of adolescent dementia. All the other matings have led to the production of healthy children, and it is probable that with the elimination by "anticipation" of the three unsound members the stock under ordinary favorable conditions may return to the normal average.

show remarkable exceptions to this general rule of the much greater incidence in the former.

These figures, however, may serve to afford further proof of the coalescence and segregation of the unsound elements of the germ plasm. The pedigrees which I have so far collected do not

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prove that Mendelian proportions exist, and this is not surprising, seeing how many and varied are the exciting causes entering into the production of insanity, feeble-mindedness and epilepsy. Moreover I have examined a number of families in which one parent was an insane epileptic, and yet in some instances none of the offspring were affected with epilepsy or insanity, and I could discover no certain evidence of Mendelian proportions. The epileptics in the London County Asylums may be of a different

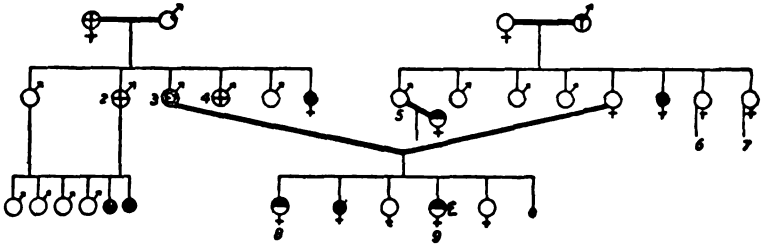

FIG. VIII.

The above pedigree shows the intensification of the neuropathic taint in a stock with the elimination of the two affected members by adolescent insanity. No. 1, the grandmother, was alcoholic, and died at the age of 40. Of her children, Nos. 2, 3, and 4 were alcoholic, excitable, and violent. No. 3 "had stupors like No. 9," and eventually died from tuberculosis at the age of 36. His wife came from a comparatively good stock as shown by the fact that Nos. 5, 6, and 7 have healthy children and grandchildren, in spite of the fact that the wife of No. 5, about twenty years ago, was a resident of Banstead Asylum for a period. Of the children of No. 3: No. 8, a girl, was certified at the age of 16, and died in Claybury Asylum from tuberculosis at the age of 21. No. 9, her sister, was subject to fits, and was admitted to Claybury Asylum at the age of 21, where she is still resident. The other two sisters are exceedingly nervous and emotional, and one has been admitted to the asylum since this pedigree was made.

type to those in the asylums under the charge of the Metropolitan Asylums Board, for I find that, as a rule, feeble-mindedness does not figure largely in their pedigrees; not more than other forms of insanity.

SINGLE COMPARED WITH DUAL NEUROPATHIC INHERITANCE.

1. The analysis of families with a double inheritance, represented by insanity, epilepsy, suicide, nervous disease, in both paternal and maternal antecedents, direct or collateral, within two generations.

25 FAMILIES EXAMINED.

No. of Children.	No. died young.	Insane, suicide, nervous disease.	Apparently normal.
154	20	46	88

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34.3 per cent of the offspring reaching adult age were affected.

2. The analysis of families in which there was an inheritance on one side only.

193 FAMILIES EXAMINED.

No. of Children.	No. died young.	Insane, etc.	Apparently normal.
689	52	43	594

6.7 per cent of the offspring reaching adult age were affected.

DIRECT COMPARED WITH COLLATERAL NEUROPATHIC INHERITANCE.

1. The analysis of families with a direct inheritance, represented by insanity, etc., in the parent.

63 FAMILIES EXAMINED.

No. of Children.	No. died young.	Insane, etc.	Apparently normal.
304	27	61	216

22 per cent of the offspring reaching adult age were affected.

2. The analysis of families with a collateral inheritance, represented by insanity, etc., in the maternal or paternal aunts and uncles.

91 FAMILIES EXAMINED.

No. of Children.	No. died young.	Insane, etc.	Apparently normal.
354	28	12	314

3.6 per cent of the offspring reaching adult age were affected.

Before passing on to the investigation of heredity in relation to insanity by the collection of pedigrees it would be well to state what I mean by the term "Neuropathic Inheritance."

THE NEUROPATHIC INHERITANCE.

TEMPERAMENT AND HEREDITY.

Just as bodily features are transmitted from one generation to another, so is temperament. The inborn raw material of character is the complex sum total of the fixed and organized characters of the species and the sex modified by especial racial and family characters. The former are dependent upon complexes of primitive states of feeling and cognition, based upon the appetites and desires and the appropriate instinctive reactions for their

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satisfaction, thereby ensuring the preservation of the individual and the species. The instinctive reactions are associated with concomitant primitive emotional states of feeling and objective manifestations peculiar to the sex and the species. The oldest phylogenetically, they are common to all human beings and are the mainspring of all human action, and this fact has been poetically expressed by Schiller in the following lines:

> Durch Hunger und durch Liebe,
> Erhält sich die Weltgetriebe.

The special racial and family characters are of later development, therefore are far less fixed, stable and organized in the nervous system, consequently are more liable to mutation.

A child is born into the world with inborn immutable and mutable characters derived from these genetic sources; of the importance of the inborn characters in future conduct there can be no doubt; in proof thereof I need only remind you of Galton's remarkable inquiry into the history of twins. He found that similar twins (developed from one ovum and therefore identical germ plasm) living in a different environment remained similar in temperament and character, while dissimilar twins brought up and living in the same environment remained dissimilar; these dissimilar twins, however, were the product of two separate ova with dissimilar germs.

Again, Galton, although he formulated a law of Ancestral Inheritance which appears to be contradictory to the accepted Mendelian Law, certainly recognized that the law only applied to masses of people, and not to individual cases, for he said: "Though one-half of each child may be said to be derived from either parent, yet he may receive a heritage from a distant progenitor which neither of his parents possessed as personal characteristics." Galton also made a statistical enquiry into the inheritance of good and bad tempers and his conclusions were that one set of influences tends to mix good and bad tempers in a family at haphazard; another tends to assimilate them, or that they shall all be good or all be bad; a third set tends to divide families into contracted portions. He showed that there is always a tendency to revert to the normal average of the race; the law

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of filial regression. The older and more fixed a character is, the more liable is it to this law of filial regression.

A study of the neuropathic inheritance generally accords with Galton's enquiries on tempers. Still the subject which is of paramount importance and interest in heredity now is: Can Mendelism he applied to human characters? Professor Pearson says: "No evidence exists of Mendelian proportions occurring in the transmission of obvious human unit characters, *e. g.*, pigment and absence of pigment (albinism)." Professor Bateson does not affirm that it has been proved for human characters, although he believes that it exists, for he says: "Organisms may be regarded as composed to a great extent of separate factors by virtue of which they possess their various characters or attributes. These factors are detachable and may be recombined in various ways. It thus becomes possible to institute a factorial analysis of an individual. How far such analysis can be carried we do not yet know, but we have the certainty that it extends far and ample indications in supposing that we should probably be right in assuming that it covers most of the features, *whether of mind* or of body, which distinguish the various members of a mixed population like that of which we form part."

From such a representation we pass to the obvious conclusion that an individual parent is unable to pass on to offspring a factor which he or she does not possess. Since those individuals only which are possessed of the factors can pass them on to their offspring, so the offspring of those that are destitute of these elements (nulliplex) do not acquire them in successive generations, but continue to perpetuate the type which exists by reason of the deficiency.

Bateson has recently said: "It should be explicitly stated, however, that in the case of the ordinary attributes of man we have as yet unimpeachable evidence of the manifestation of this system of descent for one set of characters only, namely, the color of the eyes. Moreover, if the evidence as to normal characteristics of man is defective, which, in view of the extreme difficulty of applying accurate research to normal humanity, is scarcely surprising, there is in respect to numerous human abnormalities abundant evidence that a factorial system of descent is followed." This may be true for certain well-defined abnormalities, but as

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applied to the inheritance of the neuropathic tendency, Mendelian proportions cannot be shown, according to my experience, and this is not surprising, considering the many forms in which it exists; and even if we take epilepsy, which is, perhaps, the most easily determinable of all conditions, yet there must be many undiscovered forms which would elude even an expert enquiry concerning the members of the stock affected.

Dr. Weekes and Dr. Davenport have recently published a remarkable paper on "The Inheritance of Epilepsy," which they claim shows Mendelism in the inheritance of this disease and imbecility. It is a research of great value, apart from theoretical considerations, on account of the number of pedigrees recorded, but their conclusions appear to me to be open to criticism. Schuster in a review states: "The inheritance of epilepsy and feeble-mindedness can be briefly stated as follows: Such very different conditions as epilepsy and feeble-mindedness must indicate some essential difference in the germ plasm, and the tables which the authors produce show a distinct tendency towards the specific inheritance of these two characters separately; thus the proportion of children who are epileptics born of parents who are both epileptic is higher than when one parent is epileptic and the other feeble-minded, and considerably higher than where both are feeble-minded." It seems to me that there is an inherent fallacy in assuming that epilepsy and feeble-mindedness necessarily own the same cause, viz., an absence in the gametes of one and the same germinal determinant or specific factor. It is assumed by these authors that the absence in the zygote of a particular factor or determiner necessary to ensure normal development occasions either feeble-mindedness or epilepsy. Individuals in whom it is absent are called nulliplex; according to the older terminology they would be styled pure recessives or homozygous with regard to the absence of this particular factor. Feeble-mindedness, however, is associated in all my pedigrees with all forms of insanity. Are we to assume that all forms of insanity are due to the absence of this determinant? The authors use the term "simplex" to describe the hetero-zygote. Simplex individuals are said to possess an intermediate mental status, though some are apparently normal. But, as pointed out by Schuster, it is nowhere precisely stated what are the symptoms of the "intermediate mental states."

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Now, the majority of persons classified in their tables as simplex are either alcoholic or neurotic. Persons who are really normal are called duplex. They have the normal development determiner twice over or are homozygous with regard to its presence. If this theory be correct, as Schuster remarks, then when nulliplex mates with nulliplex one would expect to find all the offspring nulliplex. In other words, the children of parents who are both feeble-minded or epileptic should be all feeble-minded or epileptic themselves. Drs. Weekes and Davenport's own tables, however, show this not to be the case and certainly my pedigrees of epilepsy do not show this. When the Mendelian proportions are not borne out the authors endeavor to explain the fact in various ways; thus, when the nulliplex feeble-minded and epileptic offspring are in excess of expectation, the excess is accounted for by parental alcoholism. Schuster points out another and more obvious explanation, viz., the manner in which the material was collected, which had the effect of ensuring at least one epileptic in almost all the fraternities investigated.

"Like tends to beget like," but a collection of statistics and pedigrees merely relating to the existence in members of a stock of certified insanity or fits or weak-mindedness is quite inadequate for scientific purposes, as the neuropathic predisposition manifests itself in many different forms, and it is necessary to know something of the temperament and conduct of all the members of a fraternity and as many of the stock as possible to make scientific deductions of value; and this requires time and patient investigation by skilled persons unprejudiced by a propaganda or the desire to prove a theory or the application of a law.

It is very important to seek the first stages and less obvious conditions of degeneration in the stock. Morel, who studied this question more than 50 years ago, pointed out that nervous, irritable weakness, the neurotic temperament, neurasthenic predisposition may be the first evidence of degeneration of a stock. Investigation of pedigrees and the experience of the family physician and the alienist-specialist show that the inborn morbid temperament may be manifested in a variety of ways by the behavior and conduct observed in various members of the stock. The signs of degeneracy which may be exhibited are self-centered, narrow-mindedness in religious beliefs, fanaticism, mysticism, spiritism,

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an unwholesome contempt for traditional custom, social usages and morality, a vain spirit of spurious art and culture, a false, self-loving vanity in pursuit of a sentimental altruism, or by eccentricities, anti-crusades and perversions of every kind, the intelligence being generally well preserved; such signs of a morbid temperament are often combined with talent and even genius, especially of the constructive, imaginative order; but the brilliant intellectual qualities of a degenerate are generally associated with either a lack of moral sense or of sound judgment and highest control. Nevertheless, these neuropathics often serve a useful purpose in their disregard of tradition and social usages. Time, chance, circumstance and opportunity play an especially important part in moulding and determining the career of members of a neurotic stock; circumstances and environment may favor one member, and he rises on the tide of fortune to an eminent position; whereas another, unfortunate or less fortunate, but with a similar inborn temperament, dies in an asylum or commits suicide in despair.

There can be no question but that the morbid irritability which many men of genius have manifested was but a defect of bodily derangement upon a sensitive mind. Byron, in one of his letters, said: "I am suffering from what my physician terms gastric irritation. My spirits are sadly depressed. I have taken a brisk cathartic and tomorrow Richard will be himself again." It is recorded that Voltaire and an Englishman after a long conversation on the evils of this world made a compact to die together the next day. The Englishman appeared and expected Voltaire to keep his promise, but the cynical genius thus expressed the change of his mental attitude: "Ah! Monsieur, pardonnez moi, J'ai bien dormi, mon lavement a bien opéré, et le soleil est tout à fait clair au jour d'hui."

In searching for the neuropathic tendency there are many possibilities of missing the inborn factor of a neurosis or psychosis, though a careful enquiry be made, even when aided by intelligent co-operation of the friends. It is necessary to enquire into the family life and conduct of the members of a stock to find the neuropathic taint. How often may it be observed that an apparently sound stock may in reality be unsound. Successful men in the eyes of the world may be really degenerates; not infre-

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quently so-called self-made men form the first step in the process of degeneration. The selfishness and meanness or the cunning, avarice and moral guile by which they have succeeded in amassing a fortune for their children to spend selfishly is the first evidence of degeneracy; but whereas the parents to gratify their selfish desires succeeded by work and abstemiousness, the children, possessing the same selfish instinct, with no need to work, and

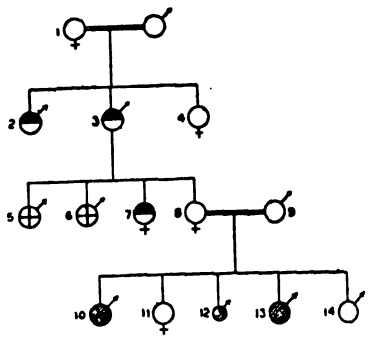

FIG. IX.

The above pedigree shows the transmission of insanity, immorality and violent temper. No. 1, the grandmother, was immoral; was found in bed with another man by her husband and son. Of her children, No. 2, an engine-driver, was "a man of violent temper who smashed things on a wholesale scale at home. He died with the delusion that he was going to heaven on the footplate of an engine." No. 3 was also a man with a violent temper, dangerous to himself and others, who eventually died from general paralysis. The daughter, No. 4, was criminally immoral; she had an illegitimate child, but no children by her marriage. The children of No. 3 are as follows; Nos. 5 and 6, both men with violent tempers, drunken and immoral; No. 7, a daughter, criminally immoral, who eventually was detained in Bethlem for a period. No. 8 is a woman with a very violent temper, smashes things, and has attacked her husband with a poker, etc.; has tried to commit suicide by poison and once by hanging; gushes to every man, but repels her husband. The husband asks, "is she mad or bad, or both?" The husband is a healthy, robust man who comes from a good healthy stock. The children were five in number; two survive (Nos. 11 and 14), and these fortunately resemble the father; they are healthy, robust and energetic. The firstborn, No. 10, was a boy resembling his mother; he was nervous, reserved, lacked mental energy, and was prone to somnambulism and night terrors, which existed in his mother's family; he died under an operation at the age of 12. No. 12 was the image of his father, but died from measles when 10 months old. No. 13 was nervous and resembled his mother; at 19 months he died from whooping-cough.

supplied with wealth, acquire vicious habits and criminal propensities, and not infrequently terminate their careers in the madhouse or prison. At the same time I do not wish to lay too much stress upon inborn criminality. Imitation and suggestion play a large part, for an inborn virtue under evil surroundings may lead to the worst forms of vice. When pedigrees are constructed showing in successive generations numbers of criminals,

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paupers and lunatics, are we quite sure that there has not been a continuance in successive generations of those social conditions that lead to crime and pauperism among such people?

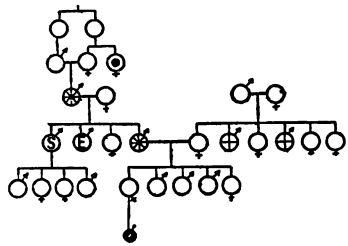

FIG. X.

A pedigree illustrating the marriage of first cousins. A genius was the result; he married a healthy woman, and their family consisted of an eldest son, a suicide; a second son, an epileptic; a daughter, healthy, unmarried; and a son, a genius. This man was a genius, but had an extremely well balanced mind; all his five children are healthy in spite of collateral inheritance on both sides. Circles with black centers, physically unsound. Circles in quadrants, alcoholism. Circles in octants, genius.

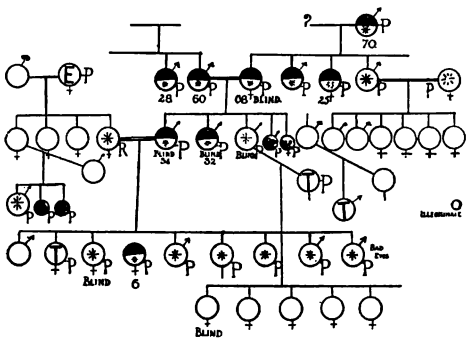

FIG. XI.

Fig. (XI) affords a good contrast to Fig. (X). The pedigree illustrates the marked transmission of insanity, pauperism and blindness. The stock is of a low type and it cannot be doubted that the majority of the individuals became paupers because they were not well enough endowed mentally and physically to compete successfully in life.

The pedigree has since been extended by Nettleship and Lidbetter. An association between mental deficiency and ocular defects is shown. The ocular defects are chiefly detachment of the retina, based upon disease of the choroid but with iritis and secondary cataract in some cases. They also noted antedating in the case of the insane members (Brain, 1913).

I have often found in the collection of pedigrees the association of insanity and suicide in a stock preceded by, or associated with,

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the existence of individuals possessing the melancholic, suspicious, brooding, self-centered, hypochondriacal temperament; and it is not uncommon for suicide of one or more members of the stock in successive generations to occur. Associated with these temperamental evidences of degeneracy of a stock may be chronic

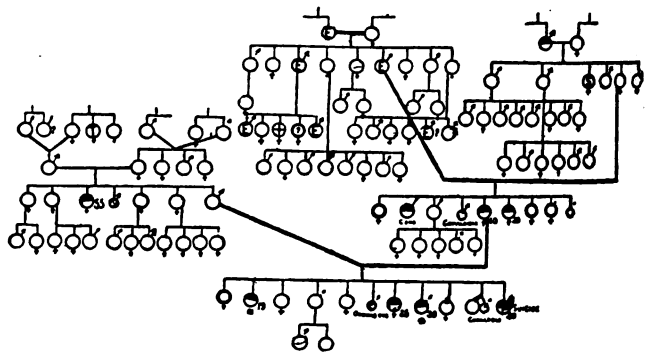

FIG. XII.

A very comprehensive and interesting pedigree obtained for me by Dr. Wilson White, showing the result of marriage of a nearly sound stock in which the temperament was, generally speaking, of the sanguine type; there was only one member insane at fifty-five, she was unmarried; her four sisters, who were all married, had some healthy, grown-up children. The brother himself, perfectly sane and healthy, married a woman descended from stocks in one of which there were many members suffering with epilepsy (E); indeed, her father and her grandfather suffered with it. On the maternal side there was suicide (S) of an aunt and insanity of a grandfather; most of the members of this stock were of a melancholy, brooding temperament. The result of the mating of these two neuropathic stocks is shown. There were nine children—of which three, marked with deep black-rimmed circles, suffered from some form of neurosis; a male congenital imbecile; a healthy male who has five healthy children; a child who died in early life of convulsions; the patient's mother who became insane at the age of 40; a female who became insane at the age of 20; two females also suffered with some form of neurosis; lastly, a male who died in early infancy. The next generation shows the result of mating this unsound stock with an almost healthy, sound stock. There are not as many unsound members as in the last generation, and we observe that the four members that became insane at the ages of 19, 25, 30, and 20, all had their first attack at a much earlier age than their mother; one of these committed suicide and two were found dead. This pedigree illustrates well the signal tendency to the occurrence of antedating. The sound members of the stock apparently inherited their temperament from the father's side, and the one member that is married has quite healthy children; this looks as if the unsound elements of this degenerate stock had been cleared out by segregation of the unsound germinal determinants, causing intensification of the disease and occurrence of the onset at an early age, thus preventing propagation.

alcoholism, dipsomania, hysteria, hypochondriasis, exophthalmic goitre, neurasthenia, psychasthenia, migraine, petit mal, or neuroses of an epileptic character, often unrecognized because not manifesting fits of the major form of the disease.

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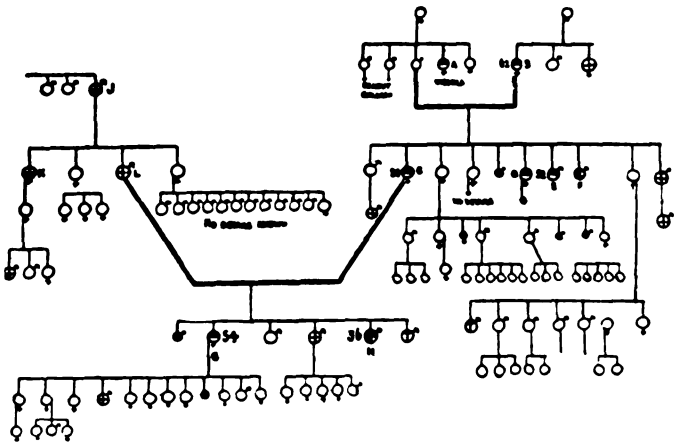

FIG. XIII.

Pedigree showing the apparent elimination of the unsound elements in a stock with dual insane inheritance. A, an imbecile, but was never put away. B, became insane at the age of 62; melancholia; in Colney Hatch Asylum for nine months but eventually died in Caterham Asylum. C, became insane at the age of 24 (St. Luke's Asylum) after the birth of her first child, which died in infancy; she was discharged after five months; her next attack occurred at the age of 38 (when suckling her last child), when she was in Hanwell for twenty months with acute mania; at the age of 43 she was admitted to Colney Hatch and died there seventeen months later. D, very peculiar and eccentric, but was never put away; she married twice, and by her first husband had one child which died in infancy from convulsions, by her second husband no children; she died between 40 and 50 years; described by her relatives as insane. E, became insane at the age of 52, acute mania, and died after three days residence in Hanwell; had been in feeble health for years and had suffered from lead colic on two occasions. F, epileptic fits from infancy; admitted to Hanwell Asylum at the age of 28; after seventeen years residence was transferred to Glamorgan County Asylum. G, became insane at the climacteric period; admitted to Cane Hill at the age of 54; chronic mania; teetotaler; her children and grandchildren, with the exception of one son, aged 26, who "drinks and bets," are not affected. H, has had delirium tremens; married an alcoholic, now in Islington Infirmary; no children; first certified at the age of 36 and has been in and out of asylums ever since; has been in Claybury Asylum five times, and other asylums besides; in features he is supposed to resemble his paternal grandfather, but in versatility and humor apparently resembles his maternal grandfather, who was a famous clown. J, K, L, are reported to be alcoholic, but in spite of this they all lived to good ages. J died at the age of 78; K is still living, over 70 years of age; and L died at the age of 74. Longevity is characteristic of this stock.

THE CREATION OF THE NEUROPATHIC INHERITANCE IN HEALTHY STOCKS.

If my premise is true that nature is always trying to end or mend a degenerate stock by natural selection and sexual selection aided by anticipation, or the signal tendency to the occurrence of insanity at an earlier age in the offspring of insane parents, there must be causes at work which either tend to revive a latent neuropathic inheritance or to develop the first stage of degeneracy by the cumulative effects of an unfavorable environment on pre-

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viously healthy stocks. The great difficulty is to determine what are previously healthy stocks.

We have seen that the neuropathic inheritance is much wider than is generally supposed, and includes many temperamental conditions and masked forms of inborn neuroses and psychoses which might easily escape recognition without very complete and careful investigation. Consequently unsuitable mating may easily be overlooked as a cause of epilepsy or insanity appearing in a

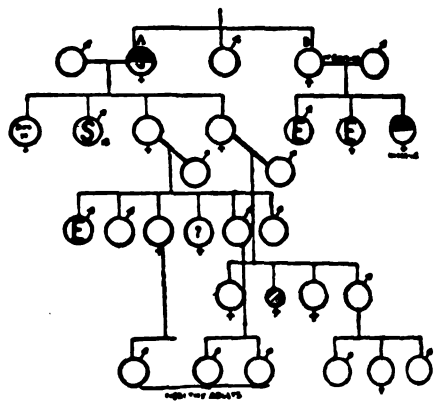

FIG. XIV.

This pedigree shows the result of marriage of first cousins, in both of whom there was a latent neuropathic taint. The family consisted of three individuals—two sisters, A and B, and an elder brother, who was married but had no family. B married a first cousin, and although neither of them was insane nor epileptic, yet they had two children epileptic and one a congenital imbecile; this terminated the stock on that side. That there was latent insanity was shown by the result of the marriage and the fact that a sister became insane. A, however, married into a healthy, virile stock; she became insane at the age of 38. Although living many years after, she never recovered; the exciting cause was the death of a son by suicide (S) at the age of 18. There were two daughters who became mothers of families; the eldest son of one suffered with masked epilepsy, but no other evidence of neuropathy was shown in this generation. The taint seems to have disappeared, inasmuch as there are healthy, grown-up members of the fourth generation.

family. This was so in the case of the pedigree of two cousins, which I will show you (Fig. XIV). Again, there may be a latent insanity in a stock, and by not searching far enough back in a pedigree drink *per se* may be assigned as the cause of epilepsy or insanity appearing in a family tree. This pedigree (Fig. XV) is of interest as showing how uncertain may be the results of mating even in the case of the most heritable of all forms of nervous and mental disease—epilepsy. The most unpromising mating in this

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pedigree seems to have ended in a few generations in the elimination of the unsound elements. In the next pedigree (Fig. XVI), however, we find that the epileptic taint may skip a generation, so that we are never sure of the absence of a latent tendency, which may be revived by unpropitious mating or some acquired conditions involving the general health of the body and especially the

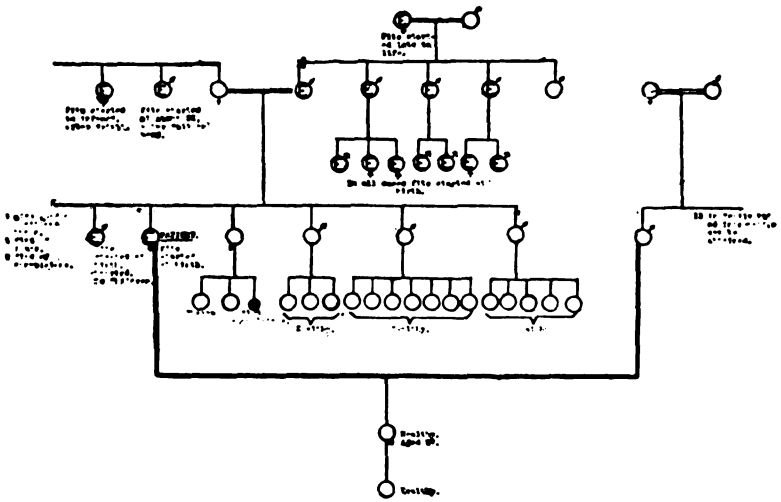

FIG. XV.

The above pedigree shows the transmission and apparent elimination of a marked epileptic taint.

The pedigree commences with the grandmother of the patient whose fits commenced late in life. Four of her children were epileptics, and one, now dead, was not. According to the history three of these married and begat between them seven children, all epileptic, whose fits commenced at birth.

The eldest, however, married a female who was not an epileptic but came from an epileptic stock, shown by the fact that she had a brother and a sister subject to fits. There were numerous children from this marriage, and of the six surviving, two were epileptics from birth (one of whom is the patient), and the remainder are healthy; also their children with the exception of one suffering from chorea.

The epileptic patient married into an apparently good stock, one healthy female child was the result; and this child has reached adult age and is now the mother of a healthy infant.

brain. The next pedigree (Fig. XVII), is of interest in showing healthy and intelligent progeny from a family in which all the surviving members are or have been insane. But we cannot predict yet what may happen to these children, as only few of them have arrived at adult age. The puerperium seems to have been in the case of all the four females the exciting cause of the insanity.

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One of the questions of greatest interest in the study of heredity in relation to insanity is this, can the germ plasm, long subjected to poisoned conditions of the blood, undergo a pathological mutation affecting the functions of that most complex of all organs—the brain—the only organ which could vary with advantage to the individual and the species, and therefore which is possibly not fixed and stable as regards its highest and latest developed functions? Poisons may be introduced into the body from without for

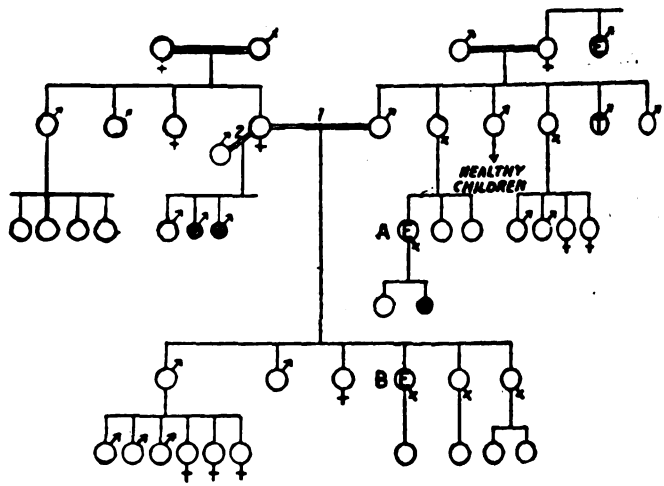

FIG. XVI.

This pedigree is of interest in showing the appearance of epilepsy in two members of a stock after it had missed a generation. All other members of the stock were mentally unaffected. One of the offspring of one of the affected members (A) died from injuries received while the mother was in a fit; while the only child of the other affected member (B) was the result of a seduction by her stepfather.

long periods of time, as in the case of chronic alcoholism and lead poisoning. Poisons may be engendered in the body as the result of the invasion and growth of parasitic organisms, *e. g.*, syphilis and tuberculosis. Can these race poisons cause a loss of specific energy of the germ cells so that they are affected as regards the determiners of the higher and later developed functions of the brain? It is extremely difficult to show by pedigrees that a blood poisoning can produce *per se* a mutation of the germ plasm, causing epilepsy and insanity to arise in a healthy stock and be transmitted. It is first necessary to prove by careful in-

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vestigation that there is no latent epilepsy or insanity in the two families; secondly, that it is not due to the commingling of two germ plasms, in one or both of which there is the undiscovered latent seeds of the neuropathic taint.

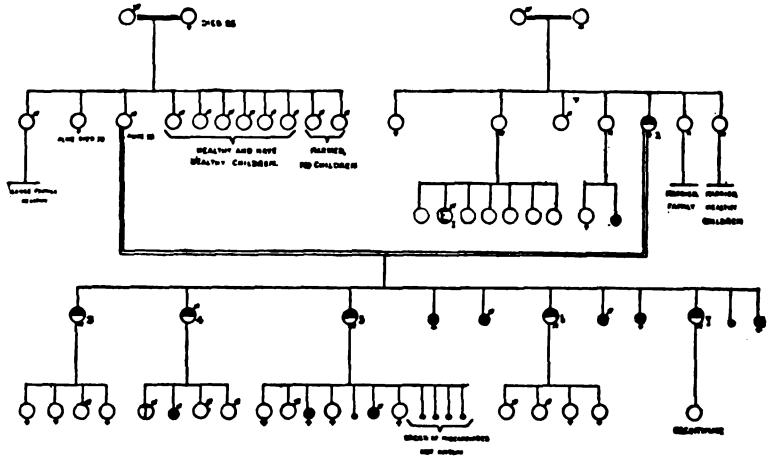

FIG. XVII.

The above pedigree is of interest in showing healthy and intelligent progeny from a family in which all the surviving members are or have been insane. The father of this family is living (aged 72) and his brothers and sisters are normal, and show longevity and fecundity, their children being healthy. On the mother's side there is no insanity noted, except in the case of (1) who commenced to have fits at the age of 4, these were severe and continued until he died at the age of 38.

2—the mother; she first became insane at the age of 38, at the time of the birth of (7). From this time until she was aged 54 she was in and out of asylums, but from 54 until the age of 66 she remained outside when she was again admitted to the asylum and remained there until she died at the age of 72.

3—is now in asylum. First certified at the age of 45, but she had had three attacks previously and these were associated with the birth of her children. Her four children, however (eldest 19, youngest 10), are healthy and above the average intelligence.

4—is now in asylum. Admitted to the asylum at the age of 45, had previous attacks but was not certified. Cause stated to be worry due to desertion by his wife. His first child died, aged 17, of consumption, the second died, aged 3, from complications arising from rickets. The two other children are alive and healthy, aged 18 and 14 years respectively.

5—one attack of insanity at the age of 30, in asylum for three months following the birth of her 5th child. The surviving children are healthy, clever, and above the normal order of intelligence.

6—first attack at the age of 24 following the birth of first child, two other attacks since associated with childbirth. Her eldest child, aged 11, had convulsions from 14 months to 3½ years of age, but is now healthy and clever. The remaining three children are bright and healthy.

7—first attack at age 19, associated with birth of an illegitimate child. Had three attacks since and is now in asylum.

I have been able to obtain two pedigrees which, I think, will fulfil as nearly as possible these conditions. The first pedigree relates to a woman with two families (Fig. XVIII); by her first

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husband, with no history of the neuropathic taint in his family, she has healthy children and grandchildren, many of whom are grown up. She then married a man who was a drunkard, one of a family of drunkards; his father was a drunkard; one of his brothers, a drunkard, had ten children, and of these one was deaf and dumb and another an imbecile; otherwise there was nothing in the family indicating an hereditary taint. The offspring of this woman by the second husband were as follows: a boy with pseudo-muscular dystrophy; a normal boy; and a feeble-minded, epileptic imbecile. A glance at the pedigree seems undoubtedly to show

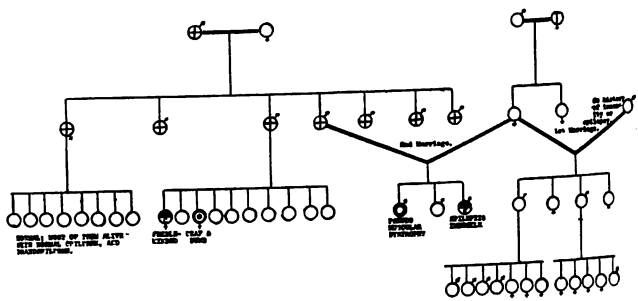

FIG. XVIII.

that the father's germ plasm was accountable for these defects and drink in successive generations the probable cause.

The next pedigree (Fig. XIX) obtained for me by Mr. Leeming is even more suggestive of alcohol and syphilis as a cause of epilepsy and insanity. Two brothers coming from a sound stock traced back two generations previously married two sisters. One sister died of alcoholic cirrhosis of the liver and paraplegia. The other married twice. By her first husband she had children free from epilepsy and insanity, and by her second husband a child who had grandchildren, none of whom were affected. Her sister, who died of cirrhosis of liver and was a drunkard, was married to a man who very possibly had suffered with syphilis, as he died from the rupture of a large blood-vessel (aneurism); there were nine living children; three were insane and one epileptic. The pedi-

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gree shows what happened to these, and this hereditary taint was transmitted to the next generation. The next pedigree (Fig. XX)

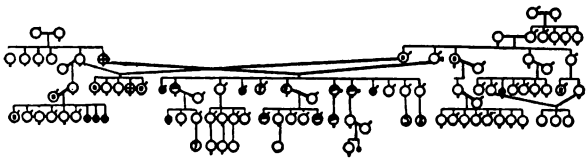

FIG. XIX.

This pedigree is of interest in showing the marriage of two brothers with two sisters. In the first instance the male suffered with heart affection, which was transmitted to the offspring. In the second case the female suffered from cirrhosis of the liver and paraplegia, and was probably alcoholic and possibly syphilitic. The result was three insane and one epileptic offspring. From the first insane daughter the issue was apparently unaffected; but from the next daughter who had masked epilepsy, of five children born two were insane. The next two insane daughters each gave birth to an illegitimate child by the same father; one of these children became insane at adolescence, whereas the other has married and has an apparently healthy child. H denotes heart affection. Half-black circles, insanity.

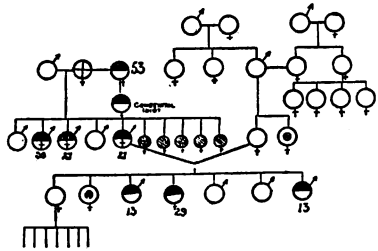

FIG. XX.

A family of drunken and insane people. The figure with half-black circles are insane; the same with the cross indicate drink and insanity; the circles with only a cross indicate excessive drinking. The two stocks show a marked difference; one side, the maternal, is practically free from any taint; almost every member of the paternal stock is unsound. The degeneracy commenced with a drunken woman whose sister died, aged 53, in Colneye Hatch Asylum, where she had been twenty years; she had a congenital imbecile daughter in Leavesden. The result of mating a sound individual with a drunken woman with insane predisposition is shown in the members of the family born: a son, healthy, then two alcoholic sons who were insane at the ages of 36 and 27, then a healthy son, then another alcoholic son, who also was insane at the age of 27; finally, five daughters who died in early life, probably through the neglect of a drunken mother, indicated by small, shaded, circular figures. One member of this drunken and insane family married into a healthy, sound stock. Seven children were the fruit of this marriage; of these, two sons and a daughter were normal, and three were insane, two of them having become insane at the age of 13. The clear circle with a black center indicates bodily disease. I used to give this pedigree as an instance of drink causing insanity, but after the establishment of the card system of relatives I found the notes of the sister of the drunken grandmother; she was an inmate of Colney Hatch for twenty years. It sometimes happens that the one is taken and the other left, and it would have been a benefit to society if the drunken progenitor of this degenerate stock had been taken.

shows how very difficult this question is, for the case has been cited in many temperance books as an instance of a drunken parentage

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causing insanity, but the card system, however, revealed insanity as well as alcoholism on the paternal side.

It may be a biological heresy, but it is firmly rooted in the minds of the majority of practising physicians, that a chronic blood-poisoning (especially when occurring in successive generations) produced by the racial poisons, alcohol, syphilis and tuberculosis, can *per se* cause degeneracy in a healthy stock by a pathological mutation of the germ plasm, which can be transmitted. Biologists say that you are assuming that an acquired character can be transmitted and you must prove that the poison is not acting on the individual by reviving a latent neuropathic taint. In a great number of cases this is probably true, but a collection of pedigrees such as these two, in a sufficient number, would afford, I believe, the proof required even by biologists.

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ON THE ÆTIOLOGY OF PELLAGRA AND ITS RELATION TO PSYCHIATRY.*

By PROFESSOR O. ROSSI.

Motto: I am only like a child picking up pebbles on the shore of the great ocean of truth.—NEWTON.

The problem of the ætiology of pellagra has been studied by numerous investigators for a very long time. Notwithstanding all the labor expended on it in my opinion the problem is still to be considered as unsolved. This judgment may surprise some and perhaps will be taken up sceptically on many sides. We must indeed accept the fact that up to the present day an apparently perfect and satisfying doctrine maintained its existence among experts, and still is supreme with the laity; this has the so-called Lombroso theory. If, however, we consider the experiments which form the foundation of this theory it becomes unintelligible how it could have persisted so long, almost without contradiction. The conditions at the time of its rise do, however, explain this fact. In those days investigators tired and, almost in despair over the long protracted efforts to solve many a clinical question, pinned all their hope on the light of laboratory experiments; on the other hand, the authorities and the people directed their attention to pellagra which, notwithstanding all the efforts, spread more and more. During this tension of expectation Lombroso brought forth his experiments which corroborated and perfected an already well-known clinical hypothesis. The desired solution seemed to have been found. As always happens during a period of enthusiasm the facts which did not agree with that theory were relegated to the scrap pile with excessive zeal, and the few isolated voices which arose against it were silenced or were decried as heretical. As soon as the intoxication over the supposed discovery had passed by the neglected facts gradually came into their rights again; but they could not get at once their full strength because the Lombroso theory indirectly had a favorable practical effect which supported

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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its scientific arguments. A problem only apparently solved will, however, sooner or later inevitably come again to widespread discussion. This is what happened with the problem of the ætiology of pellagra; and from the new discussions new theories arose. They rarely take up absolutely new paths, usually they connect new facts with old ones in such a way that it is impossible to pass over the latter in order to give a clear consideration to the former.

The theory which referred pellagra to misery and poor nutrition in general soon was declined, as it was not hard to see that there was no constant relation between these hypothetical causes and the appearance of the disease (1). The other doctrines can mainly be divided into two large groups: that of the corn theories and that of the infective theories.

Corn Theory.

(a) The theory established by Marzari (1804), and especially elaborated by Lussana, according to which corn as an insufficient food causes pellagra, could not be maintained. Corn has not such a low nutritive value as was formerly believed. Moreover pellagra affects also persons who use besides corn other foods in sufficient quantity. With regard to the nutritive value of corn, however, it is necessary to draw attention to the experiments of Devoto's school, which proved that many animals, for instance guinea pigs, when fed exclusively on corn show morbid changes (a claim substantiated by Luksch, Ballner, Paladino and Audenino), and to the fact that Lo Monaco was able to extract from normal corn a substance, the Zein, which has a damaging effect on animals (2). Finally it is well to remember that Devoto found that recovered pellagrous patients relapsed when fed with normal corn.

(b) A second corn theory is represented by De Giaxa. According to the latter, corn offers to various bacteria, especially to the colon bacillus, a favorite culture medium to form in the intestinal tract toxins which would cause the pellagra when getting into the circulation. This assumption is supported by the experiments of Pulvirenti Amore, Paladino and Blandini, who found that the virulence of the colon bacillus rises when the microorganisms are cultivated on a nutritive medium containing corn.

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(c) Associated with the corn theory is also the so-called photodynamic one. Even the first pellagrologists, Frappolli, Strambio, and Stoffella, observed the damaging influence of the sun on the skin of the pellagrous, and on their general condition (3). Of late Aschoff expressed the view based on the doctrine of photosensitization of Tappeiner that the cause of pellagra was to be found in a substance derived from corn which sensitizes the skin to sunlight, a view corroborated by Orbaczewski and Lode on ground of animal experiments.

Raubitschek fed white mice with corn, and observed that only those exposed to the daylight died. On ground of these experiments he generalizes Aschoff's views to cover the whole disease. Rondoni, however, established the fact that corn is an unsatisfactory food for mice; moreover, that when exposed to sunlight they died independent of corn or any other food. Moreover, Umnus found that even the white corn, which was supposed not to possess any photosensitizing substances, exerts a toxic effect on mice; and on the other hand, Sormani found that the lipochrome of corn has no poisonous effect on experimental animals. Hausmann and Ghedini transform Raubitschek's theory and complete it. The latter is of the opinion that corn food having a damaging effect on the erythrocytes caused the appearance of hæmatoporphyrin, which serves as a photosensibilisator, or photosensitizer. To this assumption there is the objection that the appearance of hæmatoporphyrin in pellagrous patients is not demonstrated and that people in whom it is present do not develop pellagra, even if they are exposed to sunlight. Moreover, the clinical observation that the pellagrous manifestations appear so often before the spring does not agree with the photodynamic theories.

(d) A further group represents that corn theory, according to which only spoiled corn becomes pellagrogenous. The most widely spread and most tenaciously maintained theory of this group starts from the view that a toxic substance is formed in the spoiled corn by the effect of parasites, and that this substance causes pellagra when it gets into the organism. This theory, although known by Lombroso's name, was already formulated by Vincenzo Sette in the year 1818, and later further developed by Balardini in 1844 (4). Lombroso devoted to it a long series of studies and experiments with the double aim to get a broader view

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of the relations between pellagra and spoiled corn, and to identify the toxic substance of the latter. As to the first point, Lombroso based the doctrine on the result of the epidemiological investigations, and upon the observation of the changes produced in animals fed with spoiled corn. The epidemiological results fall under the same objections which we shall direct later against all corn theories; and the experimental findings cannot be credited with the value that Lombroso ascribes to them. In reality he fed, as has already been done by Balardini, chickens with spoiled corn, and he observed many phenomena which were later denoted as "pellagra dei polli" (emaciation, diarrhœa, loss of the feathers). To tell the truth it takes a great deal of good will to identify them with the pellagra of man; or even to accept them as mere equivalents of the same, as is done by the toxico-zeist: the results obtained with the same method in other animals are by no means more convincing.

In order to extract the pellagrogenous poison Lombroso used boiled corn and obtained (1) a red oil, (2) a glue-like substance, (3) the pellagrozein. It is to the latter that he ascribes the most intense pellagrogenous effect. Lombroso studied this effect in men and in animals. The experimental animals were given the alcoholic extract containing pellagrozein from spoiled corn with their food, or injected. This had pathological results which, however, could only be evidence of a toxic effect, but by no means prove that it was pellagrogenous. Nor would it be possible to refer the toxic effect to any definite substance because Lombroso used in his experiments as a rule considerable quantities of alcoholic extract of artificially spoiled corn in which the spoiling had been carried almost to the point of putrefaction (5). Indeed none of the investigators, Pellogio, Brugnatelli, Zenoni, Berthelot, Selmi, Dupré and Babes, who aimed at determining the pellagrozein chemically, succeeded with their attempts. Several persons were given these alcoholic extracts to drink; the result was as a rule a vague subjective and a few equivocal objective symptoms (a decrease as a rule, rarely an increase of the body weight, diarrhœa, and desquamation). In 1873 a commission appointed by the Institute Lombardo repeated Lombroso's experiments, but arrived at negative results. Five physicians subjected themselves to feeding with spoiled corn and drank the tincture derived from it without any damaging effects.

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After Lombroso, Neusser deserves to be mentioned. He believes that spoiled corn does not contain any really pellagrogenous poison, but only the foundation or mother substances for the same, which, however, are changed into poison as soon as they reach an already diseased intestinal tract (Audenino lately expressed a similar opinion). In order to complete the presentation of the corn theories, I have to mention also Perni, who believes that *Oidium maidis* works in corn like a diastase, by which the albumen is transformed into toxin; and further that, according to the view of Romano, pellagra is connected with the germination of healthy corn (Enzimism).

There remains to be mentioned that, especially in favor of Lombroso's theory, experimental tests were made in the direction of the immunity doctrine. Babes and Manicatide found that the blood serum of recovered pellagra patients was able to reduce the toxic effects of extracts from spoiled corn. These experiments might prove that in the serum of persons who have eaten spoiled corn an anti-toxin is formed against the corn poison, but that doesn't prove that the corn is the cause of pellagra (6). There is really no better evidence furnished by the observations of Antonini and Mariani, according to which the serum of cured pellagrous patients from regions where corn is used has an antitoxic effect against the blood serum of an animal immunized with spoiled corn. More recent evidence established by Volpino and others, who observed in pellagrous patients anaphylactic states after the injection of watery extract from spoiled corn, also fail to decide the question, especially because the reaction was by no means a specific one.

I have so far touched upon the weak points of the individual corn theories, and I now turn to the objections which can be raised against any corn theory. The first and most important one is that pellagra also affects persons who never ate corn or corn products. Already G. Strambio describes such cases, and in recent times similar observations have been repeated. It is true that the most obstinate Zeists are sceptical as to this possibility, and they are very apt to speak of mistakes of diagnosis. This explanation is, however, simple, too simple to serve as evidence against the numerous observations of trained investigators (7).

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A second objection is that pellagra is absent in certain regions where corn is used. In many cases the absence of pellagra may, of course, only be a supposition, because it may be overlooked on account of lack of acquaintance with it. Yet Pieraccini found no pellagra, and A. Marie only a few cases, in Brazil, where corn, even spoiled corn, is used. In Italy the Island of Sardinia, with sufficient use of corn, is free from pellagra (8). I put little stress on the third objection, *i. e.*, that pellagra occurred too late after the introduction of corn. It is not always possible to state definitely when corn was introduced and when pellagra appeared first historically (9). Moreover, one should not only know when the cultivation of corn was introduced, but also when corn began to be a widely-spread food for the people. With regard to Lombroso's theory, one should also study how corn was cultivated in many countries, and what modifications the culture of corn was subjected to. To give but one instance: Alsburg found in the southern states of the United States that corn had only lately been harvested somewhat unripe, owing to the introduction of the rotation of crops and owing to the cessation of topping (10).

From the corn theory we turn to Gosio's theory. Gosio assumes that *Penicillium glaucum* and *Aspergillius glaucus, novus, flavescens* and *varians* develop a substance very toxic to animals, and presenting many phenol reactions when grown on media containing carbo-hydrates (11). This doctrine is related to the corn theory in as far as the fungi grow very often on corn, but it assumes a special position, because it admits that the fungi can also form on other food materials a toxic substance which might explain the existence of pellagra without corn. To be sure Gosio always adduced his experiments as an instance of the effect of spoiled foods, and he leaves open the question whether these poisons are the only specific cause of pellagra. The doctrine that pellagra is caused by the use of vegetable oils is mentioned only as a curiosity (12).

Infection Theory.

These may properly be divided into three groups, according to the kind of the supposed pellagra producer, *i. e.*, the groups of the schizomycetes, hyphomycetes, and protozoa theories.

Schizomycetes.—In 1881 Majocchi found in the blood of pellagra cases at the beginning of their illness a microorganism

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which he also found in the water of regions where corn is raised, and within the grains of corn. He called it *bacterium maidis*, and declared it the cause of pellagra. On the one hand, the existence of the microorganism in the blood was not corroborated by many investigators: (Cuboni, Lombroso, Neusser and V. Marchi). On the other hand, bacteriological investigations, especially those of Paltauf, identified the *bacterium maidis* with one of the ordinary potato bacilli (B. mesentericus vulgatus). It thus loses the principal rôle as the cause of pellagra, and receives a subordinate position as the cause of spoiling of corn. In 1906 Tizzoni published a similar doctrine. From the blood, cerebro-spinal fluid, internal organs of pellagrous cases in the acute forms, and from the faeces of chronic pellagrous cases, he isolated a microorganism—Streptobacillus pellagræ—which he makes responsible for the disease (13). Tizzoni found this bacillus also on the corn, and he claims that it got there through the fertilizing of the seeds with faeces of pellagra cases. The microorganism has a pathogenic effect on many animals, but here, as in the Lombroso theory, we must remark that the morbid changes produced in animals not only do not compare with pellagra, but enter the category of phenomena produced by many kinds of infections or intoxications (14). This theory calls for many objections. In the first place, it cannot exclude conclusively the possibility that the bacteria found in the blood are merely ordinary intestinal organisms which may entered the circulation. Such a possibility would have to be absolutely excluded all the more, as Tizzoni found the bacilli only in the blood of very severe pellagra forms, and since he often isolated them from the dead (15). Positive results of their control experiments from the blood were obtained by Ramella, Terni, Wolf James and Wood. On the other hand, they were negative in the hands of Raubitschek, Rossi, Lavinder, Bravetta, Cesa-Bianchi, Bezzola, Perroncito. The latter did not even find the Tizzoni bacillus on the corn (16).

The theory of Tizzoni has lately received considerable modification. In a preliminary communication he announces that the chains of bacilli, cocci, described by him formerly, are nothing but the parts of ramified threads, whose protoplasm has decayed into bacillus or coccus-shaped pieces. Frequently these organisms end in cones, and are arranged in tufts, which start from a granular

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center. On the ground of these observations Tizzoni expresses the opinion that his microorganism is not polymorph, but pleomorph, and does not belong to the schizomycetes, but to the actinomycetes (according to Lachner Sandoval), and perhaps also to the higher hyphomycetes.

Hyphomycetes.—In the year 1902 Di-Pietro (17) reported that the spores of *Penicillium glaucum* contain toxin which, when injected into chickens or given in the food, produce morbid phenomena. The most outspoken advocate of the hyphomycete theory is Ceni. On the ground of numerous experiments he came to the conclusion that the hyphomycetes are the cause of pellagra. He incriminates *aspergillus* and *penicillium;* among the former *fumigatus, flavescens, varians, niger, ochraceus,* and a variety which he calls *aspergillo bruno gigante.* Of the latter he assumes two varieties, the *penicillium glaucum A* and *penicillium glaucum B.* The theory rests on the following facts: Many of these hyphomycetes are frequently found in the faeces of pellagra cases, on spoiled corn, spoiled corn-meal or polenta, and moreover it is possible to raise some of them, for instance, the species varians and ochraceus, from the air of dwellings in regions with pellagra. Pieces of the internal organs of pellagrous patients cultivated in Raulins fluid often yield fungi of the genus *aspergillus.* The hyphomycetes have a toxic action on animals into which they are introduced on corn-caryopses into the abdominal cavity. Guinea-pigs fed with infected corn die; chickens emaciate, lose the feathers and suffer with diarrhœa.

The pellagrogenous effect of fungi neither belongs to the substratum on which they grow nor to the mycelium, but rather to the spores. When they are introduced per os into the organism the gastric juices act so that they lose their germinating properties, whereas their toxic power remains unaltered. The spores of the aspergilli, especially of aspergillus fumigatus, spread within the organism and reach the internal organs, eliciting very grave forms of pellagra. Those of the penicillia remain in the intestinal tract and exert from there their toxic effects.

The various hyphomycetes form poisons of different natures, either stimulating and producing convulsions or depressing and paralyzing; one and the same fungus can, however, furnish different poisons in different seasons (18). Ceni, moreover, observed

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that the hyphomycetes are more poisonous in those seasons in which pellagra reigns more violently, and in the regions where it is spread they exert a pellagrogenous influence, whereas they ceased in the regions in which the disease does not occur. These circumstances corroborate the view that the fungi mentioned are sources of pellagra. Many important details of this theory were disputed (19); but apart from that it is not convincing, above all things because Ceni has never demonstrated the pellagrogenous spores in the tissues of pellagra cases. It is true he cultivated from the internal organs of pellagra cases hyphomycetes, but according to one of the most important corollaries of his theory they cannot be derived from pellagrogenous spores. Indeed, he says that the spores do no longer produce the well-known hyphomycetes disease (pseudo-tuberculosis) but pellagra when through the action of the gastric juice their germinating qualities have been lost. The animal experiments are subject to the same criticisms which have been mentioned before for the Lombroso theory.

G. W. Rehrer also thinks that the *aspergillus fumigatus* and *flavescens* have something to do with pellagra. He found genuine granulomata in the internal organs, however (20).

The theories mentioned so far are not wholly separate from corn, inasmuch as they admit that the corn is the most widely spread carrier of the infective agents, and that it may increase its toxic effects. Under the motto "free from corn" we meet the opposite, *i. e.*, the protozoal theories. Sambon believes that pellagra is to be attributed to a protozoan which is transferred to man by the bite of a Simulium. As a matter of fact this theory is a pure hypothesis, for neither in pellagra cases nor in simulia has the supposed agent been found. That pellagra follows in its distribution, that of the simulia as Sambon maintains, has been denied on many sides (21).

According to Young, pellagra is brought about by amœbæ, but his assumption has found few adherents. Many investigators, however, admit that the amœbæ furnish only a predisposition of the intestinal tract for the absorption of the poison.

Our hasty review of the field of theories will come to the conclusion with a brief sketch of the Alessandrinian theory. Even Dalla Bona thought he had found the cause of pellagra in the use of poor water. Alessandrini observed in poor water larvæ of the

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genus Filaridæ. It was sufficient that two larvæ, a male and a female one, should get through water into the organism in order to cause an infection which would lead to pellagra. But these organisms have never been found in pellagra patients, and, moreover, the epidemiological relations between pellagra and impure water are by no means established (Frattini, Bezzola, Camurri, Commissione pellagrologica ministeriale italiana) (22).

If I may now express to you my personal opinion of the problem of the ætiology of pellagra, I am forced to admit that our knowledge does not reach very far beyond that of the first pellagrologist. If we admit that pellagra is a genuine autonomous disease, which I think is difficult to deny, we still have to look for its specific cause. We only know collateral causes, the importance of which is, however, very difficult to measure, as is always the case where the real causes are hidden from us. As collateral causes I may mention poor economic and hygienic conditions. Notwithstanding the rare cases in the well-to-do, observed especially in America, pellagra remains a disease of the poorer class. The exceptions merely prove that pellagra is not produced by misery alone, and they allow us to suspect a cause which may alone or under favorable conditions be effective. Poverty, poor food, and an almost exclusive diet of corn are practically synonymous with the country population of many regions. Healthy corn, apart from observations on its chemical constitution which tried wholly theoretically to make it appear as a not insufficient food, must be viewed as insufficient from a practical point of view (23); this holds even more for spoiled corn or spoiled products of corn, which, unfortunately, are used when poverty passes into misery or destitution; moreover one cannot exclude the possibility that spoiled corn may have a toxic though not specific effect. My view of the importance of the collateral causes mentioned finds support in statistical data. Pellagra disappeared from the province Les Landes soon after the soil had been made fertile, owing to the efforts of Napoleon, and gave thereby a richer yield and raised the general prosperity of the people. In Italy pellagra is on the decrease. Cantarutti counted in the year 1881 in an agricultural population from a pellagra region 104,067 pellagra cases among 6,414,414. In the year 1910 the same population had risen to 7,886,497, and the number of pellagra cases had come down to

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33,869. These statistics can be depended on, because they were worked up with the same criteria (24).

The fight against pellagra in Italy goes in two directions; the direct activity of the government decreases the consumption of spoiled corn by supervision of its sale. Special commissions nominated in the various provinces aim at providing better food for the pellagra cases. The effect of these provisions indirectly works in the same direction. The farmer draws the conclusion from the law that the sale of spoiled corn is prohibited, because such corn causes pellagra. Further, he gets the experience that better food acts favorably on the disease. Therefore he demands better wages from the landlord in order to avoid the disease and to procure proper food. The landlord who has to pay the laborers more is forced to improve the agriculture, the economic conditions are thereby improved and the pellagra decreases.

The question of pellagra may be considered from two points of view, the social and the scientific. From the social point of view all authorities have to maintain severely the present rules against the dealers, for the latter already begins to exploit the uncertainty of the scientific knowledge of the ætiology of the disease. From a scientific point of view a renewed careful revision of the statistics and the epidemiological conditions of the disease is desirable. A possibly specific cause of the disease should, according to my own modest opinion, be looked for with special zeal in the organism of the pellagra patients, *i. e.*, the undoubted determination of the organisms must precede the study of the avenues of entrance and the effects of the agent.

Many of the theories mentioned followed another course, arrived at no solid results and repeated themselves at various times with various modifications. Lussana improves Marzari, Lombroso follows the traces of Balardini, who comes close to Sette; Pari gives the impulse to the theory of hyphomycetes; Tizzoni resuscitates Majocchi; Manning gives a new garb to Hameau; Dalla Bona can be seen behind Alessandrini, but the specific cause of the disease remains hidden. In these efforts one must not disregard the fact that the pathological anatomy of pellagra in general and especially the changes in the central nervous system have more the stamp of an intoxication than of an infectious process.

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II. *Relations of Pellagra to Psychiatry.*

Alienists differ in their treatise of pellagra. Some of them point to it only as one of the general causes of insanity; others devote to it a special chapter, but believe that the psychic manifestations belongs to other well-known psychoses which can also have another cause, *i. e.*, amentia and melancholia. Very few only express the view that the mental symptoms have their own traits (25).

The first two classes practically arrive at the same conclusion that pellagra from a psychiatric point of view is only a cause of already known mental diseases, but methodologically the second class takes a more advantageous point of view. However, the aim of alienists must not limit itself merely to the study of mental phenomena, but it must extend also to the determination of the causes, the mechanism of their development, the analysis of the changes caused; in short, it must aim at creating complete disease pictures. It would then mean working in the opposite direction if we try to separate the mental symptoms of pellagra from the disease complex; the problem of pellagra would remain almost foreign to alienists, whereas they should take the same position with regard to it that they have taken, for instance, in the case of alcoholism. Whether pellagra leads only to well-known psychoses, or whether it produces a psychosis characteristic of it, that is a question for which to-day we still lack sufficiently convincing studies. The question, nevertheless, appears to me as a very meritorious one for alienists working in pellagra regions. The task is certainly by no means simple, and should be carried through with all precautions. Above all things, alienists should make sure that the patient who shows the mental alteration is really a pellagra case. One certainly must admit that the diagnosis of pellagra is not always an easy one. Neither the general symptoms nor the alterations of the skin show in every case a decisive peculiarity (26). The efforts of various investigators to find constant and specific biological diagnostic tests are still far from having reached the desirable aim (27). It is certainly wise to reject the opinion mentioned on some sides that pellagra psychoses can be diagnosed even without the physical symptoms of the disease. This is certainly very doubtful and should be rejected in the present state of our knowledge as dangerous. When the alienist has made the

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diagnosis of pellagra there remains for him a probably even more difficult duty; he should exclude the possibility that the mental symptoms are merely those of a psychosis which happens to have broken out in a pellagra case; for indeed pellagra may easily promote, rather than retard, the action of other causes. For example, it has long been recognized that it is frequently accompanied by alcoholism which may present similar symptoms. Anyone will understand that the exclusion of the above possibilities requires the most careful observation, even where we are dealing with psychoses the symptoms of which deviate considerably from those of pellagra. In many cases, for instance, between two states of depression in a pellagra case, the one of purely pellagrous origin, the other belonging to the manic-depressive group, the direct observation may not make possible a differential diagnosis, and only the anamnestic data and the course may finally make possible a distinction. In the present state of psychiatry one must admit that investigations of the pellagra psychoses which satisfy these precautions are still to be looked for.

According to my own personal impression, the mental disorders of the pellagra cases fall into two classes, which may perhaps represent only variations of the same psychosis; in the one depression is predominant, in the other confusion. But the former is not to be identified with melancholia or the latter with amentia. A point of difference might be found in the severity or in the quality of the individual mental components of the symptom complex. We must, however, remember that the conception and the limits of melancholia and of amentia unfortunately are by no means definite, so that differential marks of this kind, estimated differently by different schools, would probably precipitate merely an elegant but useless academic discussion. Nevertheless, the pictures of pellagra and of the above mentioned disorders are distinctly different from each other as far as their origin, their course, their outcome, and, to a certain extent, their pathological anatomy are concerned. Let us enumerate briefly the differential points for the two pictures.

The Depressive Type.—Whereas melancholia usually comes on relatively rapidly, often after an emotional upset, and not infrequently in individuals who have had similar dysthymic reactions before, the depression in the pellagra case comes on slowly,

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through a period of indefinite symptoms, which in a rather inappropriate manner have been described as neurasthenic, and as has already been seen by the acute vision of Strambio, without emotional excitement. The mood in the depressive phase of pellagra is always a sad one, and the expressions of the patient are in harmony with it. Only rarely do they seem somewhat bright and elated, especially when speaking; yet this exception only forms a very good example of the so-called Galgenhumor (Vedrani). Phases with the clinical features of those episodes which Kraepelin has called Mischzustände of his manic-depressive insanity never have come under my observation. The course of thought and action is considerably inhibited in the depressed pellagra patient. This inhibition makes the patient difficult of access and interferes with their psycho-motor processes in such a manner that they are erroneously looked upon as confused or demented. This error no doubt has occurred very frequently, all the more easily as the patients very often appear devoid of will and courage rather than low spirited. Anxiety feelings come on often accompanied by motor unrest. Delusional ideas may occur, but the delusions are loose and are readily abandoned by the patient. The depressed pellagra case has always a clear realization of his physical illness. As a rule he sees the cause of his depression in the physical disorder, whereas on the contrary the case of melancholia frequently does not trace his sad mood to a disease, but to external or internal experiences, their fate and failures. With regard to physical phenomena, we must remark that the insomnia is more marked in melancholia than in pellagra depression. In the latter diarrhœa is as frequent as constipation is in the former. With regard to the course, the most important difference consists in the fact that the depression in a pellagra case may pass into confusion, but not into the manic condition, as is frequently the case with melancholia.

The picture of confusion reaches its most complete form in that condition which is known as pellagra-typhoid. Here the difficulty of separating other causes of the mental disorder are even greater. In order to diagnose pellagra-typhoid it is absolutely essential to overcome these difficulties; otherwise one might easily include amentia forms erroneously. Microscopic examinations and cultures from the blood and the cerebro-spinal fluid may reveal a possible septicæmia, often of intestinal origin. Typhoid and para-

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typhoid infections, such as infections with colon bacillus, can be determined by agglutination tests. A careful examination of all the organs for foci of abscesses, pulmonary infections and the like, must be made. It is first necessary to determine the cytological and chemical condition of the cerebro-spinal fluid for the purpose of recognizing anomalous forms of meningitis. Chemical and microscopic examinations of the urine should allow us to exclude kidney affections. The percentage of nitrogen in the blood serum deserves to be determined in order not to overlook the so-called azotoæmia. If we find one of these changes in a pellagra case the diagnosis of a pellagra-typhoid is no longer permitted, and the case is to be excluded from the study of pellagra psychoses. If we use such criteria as these many of the cases described so far as pellagra-typhus must be excluded from the genuine pellagra psychoses. But there still remain cases for which this term is appropriate, and in these we may observe differential signs speaking against the classical amentia. The pellagra-typhoid often breaks out in patients who have already shown mental pellagra symptoms. One finds in them neurological symptoms which belong to pellagra, but are foreign to amentia, such as, for instance, hypertonia, abnormal exaggeration of the tendon reflexes. From the mental point of view one does not find the patients so confused as they appear (Vedrani, Rossi). They are partially accessible and often can give correct information concerning their personality. Frequently the patients brought to a hospital recognize that they are no longer at home, but they may not be able to form a clear idea of the new environment, although they can grasp the individual facts. Insight into the illness is always present, whereas the effect of the impressions of the outside world may be considerably impeded. Vivid conscious processes can still be elicited from inner excitations. Hallucinations are rather infrequent and not so manifold as in amentia. The pressure of excitement is more pronounced and disorderly in the latter, I might say wilder, than in the former (28). Pellagra-typhoid might be confused with delirium tremens, in which also the auto-psychic orientation is preserved; the anamnesis, the physical symptoms, and the pecularities of hallucinations of the alcoholic allow us, however, to avoid this mistake. If the patient is of advanced age it becomes necessary in differential diagnosis to consider those extremely violent and rapidly fatal

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states of anxious excitement which Kraepelin describes in the præsenium, and which, according to his opinion, may be related to other delirious states of excitement (senile delirium) of advanced age. In these cases the confusion is more like that of amentia, the motor excitement is pronounced and hallucinations are abundant.

There is another question in the relation of pellagra to psychiatry which still must be considered as unsettled, *i. e.*, the question whether pellagra as such can produce forms of dementia, quite apart from the old incorrect notion of a supposed secondary dementia as a common termination of any type of psychosis that does not pass into recovery. That the direct effect of the pellagra poison should elicit dementia symptoms seems doubtful to me. One may accept as proven that the remark made on many sides, that inhibited or confused patients are apt to be considered demented, holds also for pellagra. One must not, however, deny the possibility that in a pellagra case dementia symptoms of arterio-sclerotic origin may occur, and that the arterio-sclerosis, at least in part, might be referred to the pellagra.

Pellagra is not a hereditary disease and furnishes no hereditary psychoses (29). The offspring of pellagra cases may present a general indefinite predisposition to any disease, including mental disease, or they may show dystrophies which form from a psychiatric point of view infantilisms of various types, which, however, may also be produced by other causes.

Gentlemen, my report on the present status of our knowledge unfortunately can only corroborate the statement that this problem, which has been troubling medicine so long, still awaits a solution. We must not, however, be discouraged by this fact.

In 1871 Fontana wrote appropriately "les efforts que font les hommes pour découvrir la vérité sont donc une espèce de jeu de hasard dans lequel la probabilité de tomber dans l'erreur est très grande, et celle de trouver la vérité est très petite." The results of the study of pellagra, especially of its ætiology, so far justifies his judgment. May the new efforts result in a speedy discovery of the right way to the truth!

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ANNOTATIONS.

(1) In many treatises on pellagra this theory is erroneously ascribed to Strambio, one of the first pellagrologists. In the way of correction we must emphasize that this sharp critic never has expressed himself in this sense. As a matter of fact he wrote in his "Dissertazioni sulla pellagra" (Milano, 1794, p. 46), that poor nutrition "cannot by itself be the cause as some pretended," because so many in equal misery and poverty do not become pellagrous, and others who are well fed become so; hence there must be other circumstances which make poor living capable of contributing to pellagra. These views might be maintained at the present day.

(2) Zeïn is a protein body whose products on hydrolosysis are different from those of other protein substances (Willcock and Hopkins). With regard to the value of zeïn as nutritive material, interesting facts can be found with Szumowski, Kossel and Soave. Lo Monaco believes that it cannot maintain the nitrogen equilibrium in the organism, and it may even do harm through its wealth of phenylalanin. Baglioni fed guinea-pigs with cornmeal to which zeïn was added, and he saw the animals die after 24 to 48 hours with symptoms which are similar to that of phenol-poisoning. Feeding the animals for a long time with zeïn results in a rise of ammonia in the urine and a decrease of urates. To this we must add that the school of Devoto (Moreschi) has demonstrated the increase of ammonia elimination in pellagra.

(3) Frappolli had an incorrect idea that pellagra was only a skin disease, and that it had to be ascribed exclusively to the influence of the rays of the sun. Strambio, however, recognized that pellagra *est morbus, desquamatio est morbi symptoma,* and he observed that the latter is dependent on the effect of the sun's rays, and that *vitam omnino umbratilem ad eam vitandam sufficere.* He admitted, however, that the general symptoms are increased as soon as the patients are exposed to the sun. With regard to the photodynamic theory, we should also mention an observation of Bouchard, who in 1877 had a pellagra case bare the forearm and expose it directly to the sun rays. One-half of the exposed skin surface was moistened with an alcoholic solution of sulphate of quinine; the erythema appeared only on the part which was not moistened. From this observation Bouchard concludes that the sun rays have an injurious effect on the skin of pellagra because the fluorescent substance is absent in it. Many veterinary surgeons had observed that calves kept in the stable during winter and fed with corn did not show morbid symptoms until spring when they were in the open.

Raubitschek's photosensitizing substance is extracted from corn by alcohol, and the corn treated in that way becomes harmless.

(4) Sette found in corn a change of which the botanists who were consulted, among them Decandolle, did not know whether it was to be referred to *Mucor uredo* or *Licoperdon* "la pianticella velenosa che sopra il guasto grano sorge non è la causa della malattia ma lo è la degenerazoine dell'olio grasso e forse della Zeïna, che il cereale contiene."

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Balardini ascribes the change in the corn to a fungus *Sporisorium maidis*. Lombroso thought at first the corn was spoiled by *penicillium glaucum*. Later, however, on ground of his own studies and of the studies of other investigators (Monti, Pelizzi, Babes, etc.), he believed he found the cause in many other microorganisms. When Lombroso began his investigations Balardini was a member of the Instituto Lombardo di scienze for whose prize Lombrozo competed. He became an influential defender of Lombroso, and was readily persuaded that he had considered his fungi erroneously as *sporisorium maidis* instead of *penicillium glaucum*. He finally adhered merely to the nucleus of the doctrine, *i. e.*, that spoiled corn is pellagrogenous. Recently Reed expressed the opinion that the cause of the spoiling of corn is to be sought in Diplodia zeæ. Diplodia zeæ is a corn parasite which has appeared lately. It causes those alterations in corn which the Americans call dry rot or cornstalk disease. The parasite changes the chemical composition of corn, the meal becomes toxic for mice, and on alcoholic extraction it furnishes a substance which has a similar effect as the pellagrozein. We may add that not only corn itself but cornmeal and insufficiently cooked cornbread or polenta can be infected like the former and can have harmful effect.

(5) Lombroso had confided to the chemist, C. Erba, in Mailand, the preparation of the spoiled corn. He put the corn in barrels of water, and there allowed it to spoil nearly to the point of putrefaction. From the alcoholic extract prepared from this corn he extracted the so-called pellagrozein, a substance described by Lombroso as brownish-red, gluey, neutral, of somewhat bitter taste. Lombroso used for his experiments the alcoholic extract of the spoiled corn with its pellagrozein content. After the injection frogs showed increase of reflexes, tetanus, rise of temperature, with fatal termination. Among the birds, chickens, as remarked above, showed the greatest resistance. In order to kill them it was necessary to use 10 gms. of the extract per kilo. Twenty-seven grams injected in five days only caused emaciation and diarrhoea. Pigeons and falcons proved to be more sensitive. Rats would get the amount of 12 gms. per kilo to drink without any harm. The same amount injected produced torpor, refusal of food, paralysis of the hind legs, one-sided contractions. A very small *mus silvaticus* died after the injection of 2.5 gms. with tetaniform manifestations. In cats and dogs the injection of 1.5 to 2 gms. produced convulsions, tetanic attacks, dyspnoea, and death. We must add that the lethal dose of the extract amounts to what would correspond to 15 kilograms of corn for a man of medium weight.

(6) According to my own views it would not do to accept this as decided. Babes and Manicatide mixed the serum and the extract of spoiled corn before the injection, and we may well suspect that between the heterogeneous albumens phenomena of precipitation may arise and that the diminution of toxic effects may be traced to this fact.

(7) Strambio mentions among the pellagrous cases observed by him a clergyman and a druggist who ate rye-bread and used the best of food. The commission which was appointed for the study of pellagra in 1844

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found pellagra cases among the miners of the Aosta Valley who then fed largely on chestnuts. In the year 1846 Cipriani, too, found pellagra among people who never had eaten corn. Similar observations were made in America by Tucker, Albright, White and Miller.

(8) There is in support of the second objection also an old observation made by Strambio, and recently corroborated in America, that cases of pellagra can occur also in the relatively well-to-do, who consume corn products rather less frequently. There further is an experiment made by Zeller, who of two groups of 56 persons each, fed one exclusively on corn products, whereas the other was altogether deprived of them. Zeller observed cases of pellagra in both groups, but rather more numerous in the latter. The adherents of the Lombroso theory naturally do not acknowledge the force of these two objections, inasmuch as even occasional consumption of spoiled corn may be sufficient to produce pellagra. Neusser found cases of pellagra in Roumania without corn diet, and he claims that the mother substances of pellagrogenous poisons may be distilled from spoiled corn and reach the organism as brandy; in Italy Antonini joins his opinion as far as concerns some cases observed by him in Friuli. In order to prove such a hypothesis it would be necessary in the first place to define the mother substances and to bring the proof that they are actually capable of distillation. The second objection is answered by Lombroso adherents with the remark that pellagra is absent in regions in which corn is used where the corn is only used in a normal condition. As a matter of fact it is, however, very difficult to determine the limits between healthy and spoiled corn, since Lombroso, himself, Babes and other toxicozeists admit that corn in its ordinary condition of conservation always contains numerous microorganisms and their products, and that most of the apparently healthy corn can to some extent be considered as spoiled. Apart form this I mention Cosimo Ridolfi, who saw people eat moulded corn without any pellagra cases, and that Pieracini, in Brazil, found the corn frequently infected with *aspergillus niger* and *penicillium glaucum*. Ceni communicated at the 8th meeting of the Società Italiana di Patologia (Pisa, 25th to 27th March, 1913), that he had met with but one case of pellagra in Sardinia, and that in a man who never had tasted corn.

(9) The anti-zeists claim that in Bukowina corn was introduced in 1786. Pellagra, however, appeared only towards 1881 (Philippowich and Kluczenko. In Roumania, too, there is a long interval of time between the introduction of corn in 1700 and the eruption of the disease in 1833. In America, too, if we neglect the claim of Niles that Baruino found pellagra among Indians already in 1600, we find the following dates for the eruption of the disease established by Babcock: Illinois, 1812 (Kurella); South Carolina, 1828; New York and Massachusetts, 1860 to 1864; Missouri, 1882 (Brockschmidt); North Carolina, 1884; Georgia, 1885; Pennsylvania and Louisiana, 1893. As far as Italy is concerned, leaving out of question the claim of Sambon, who claims to have found in a work of Gerolamo Savonarola words which are held to prove that corn had been known in Italy as early as 1500, we may mention the following dates:

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In Piedmont the culture of corn began in 1750, and in 1800 Boerio and Antonini found the first cases of pellagra. In the region of Brescia corn was introduced in 1774, and pellagra started in 1807. In the province Mantova corn was introduced in 1817, pellagra appeared in 1820. In Tuscany the cultivation of corn began in 1769, and in 1784 Tozzini found pellagra cases in Mugello.

It is easy to understand how the first cases of the disease must have been unrecognized in those days.

(10) Alsburg also points to the fact that the cultivation of corn spread slowly into the more northern regions where corn cannot ripen well; and that the farmers prefer those varieties which are rich in fat substances, that is, those with well developed embryo, which are more easily infected with fungi. The same investigator also speaks of the fact that a large amount of corn is imported, and it is naturally difficult to give statistical data such as those mentioned above. Those collected by Gaumer in Yucatan are interesting. There corn is cultivated and used and yet there are no cases of pellagra. In the year 1802 grasshoppers devastated the fields. Corn was then imported until 1891, and this led to the appearance of pellagra. Between 1891 and 1901 home-raised corn was used again, and the pellagra disappeared. But with a renewed importation of corn it again reappeared and spread. One naturally must not forget that in bad years the consumption of imported corn was connected with poverty.

(11) The hyphomycetes form their toxic substance on corn at the expense of starch. They also form it on chestnuts and on artificial media, for instance, Raulin's fluid, at the expense of sugar. The appearance of this substance begins with the growth of the hyphomycetes, and it is found in largest amounts towards the epoch of sporification. After this epoch the production ceases but the product does not disappear, it is found in the medium as well as in the fungus, and belongs to a group of aromatic substances and yields phenol reactions by which it usually can be demonstrated. Sometimes, however, in certain phases of culture the product is changed and loses the property of reacting to chloride of iron. The product of the hyphomycetes of corn has the formula $C^{6}H^{10}O^{5}$, its molecule is of cumerinic nature, and shows a tendency towards glucosidic combinations; it is formed in the same amounts on normal or on fat-free, or on pigment-free corn. From cultures of aspergillus fumigatus Gosio also isolated a substance which produces extraordinarily fine needle-crystals, insoluble in water, little soluble in cold, more soluble in warm alcohol, and melting at 141° C. This substance gives the reaction of phytosterine; it diminishes or disappears when the poisonous property of the cultures is higher, which gives rise to the opinion that it has antitoxic effects as cholesterine has against saponine. Gosio's pupil Ferrati injected for a long time dogs with an extract of corn infected with penicillian and this produced the appearance of convulsions. He injected the dogs every second day with 5 cc. of the alcoholic extract.

(12) Strambio mentions that many of his contemporaries were inclined to find the cause of pellagra in the use of bitter and irritant oils "olii

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acri ed irritanti." Of late Mixell has accused plant oils of being pellagrogenous on account of their content of linolin which is accumulated in the tissues, and which damages them by its oxidation process.

(13) This microorganism appears in its fundamental form as a double lancet-shaped bacillus, but it often deviates from this form and resembles cocci or is biscuit-shaped; in short it is polymorphous. It grows most readily on culture media which contains non-coagulated albumen. The blood of man and rabbits is extremely favorable for its growth. The microorganisms can readily be stained with a watery alcoholic solution of fuchsin or with Löfflers blue; it resists Weigert, but not the Gram reaction.

(14) Tizzoni ascribes great importance to many experiments on monkeys. He observed in his animals fatigue, contractures, diarrhoea, alopecia. These manifestations are too indefinite to permit us to speak of pellagra. Moreover the significance of these experiments is somewhat uncertain because the animals had been injected formerly for other experiments with the colon bacillus.

(15) Nor are the immunity experiments of Tizzoni evidence in favor of the specificity of the microorganism. He found that the serum of pellagra patients precipitates the extract of cultures of his bacillus in a relation of 1 to 10. It may well be that we deal here with non-specific precipitation reaction between human and cultural albumen. The agglutination experiments show that the bacillus is agglutinated by pellagrous sera of fresh cases in a ratio of 1 to 10 to 1 to 20, and a ratio of 1 to 100 to 1 to 200 if the disease is not acute. Apart from the fact that these figures are a little too low for specific agglutination phenomena, one might explain the experiments in the same manner as those of Babes, that is, that the serum of pellagra cases whose blood may contain bacteria not specific for the disease will produce agglutinins for them.

(16) Ramella found the bacillus in four pellagra patients. He himself does not exclude the possibility that he might be dealing with an ordinary microorganism which might have entered the circulation. Terni examined 89 cases. In the blood of 17 individuals he found the strepto-bacillus, in 40 other microorganisms and rare specimens of a bacillus similar to Tizzoni's bacillus. In 6 cerebro-spinal fluid he found only once the strepto-bacillus. Fifteen control experiments in normal persons were negative. We further must mention Bass, who from the faeces of pellagra patients and from corn-bread which had been used by them, isolated a bacillus, which in chickens when given with corn food produced a slight emaciation, a foot erythema, and diarrhoea. Experiments of the Pellagra Commission in Illinois speak against infection theories of this kind. Twelve Macaques were injected with blood, cerebro-spinal fluid and organic emulsions of pellagra cases, but there appeared no pellagrous alteration.

(17) In the year 1864 Pari expressed the opinion that pellagra might be caused by *ustilago maidis*. This fungus produced on the corn plant that disease which the Italians call carbone. According to Pari this fungus gets into the human organism through corn or also through other

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food articles on which it settled from the air in the farmhouses where it is brought with the harvest. Up to this point the doctrine might be at least worthy of discussion. Later, however, Pari completed it with paranoic ideas. He supposed that the substance of the fungus, fungina, settled in the cutaneous tissue where it causes the alterations when burned by the sun's rays.

(18) *Aspergillus fumigatus* gives us very violent poisons, producing convulsions; *varians* gives poisons of variable nature and intensity; *niger* gives poisons of a depressive nature. *Penicillium glaucum* A gives poisons of a depressing and *penicillium glaucum* B poisons of an exciting nature. As has been said above these properties may change in one and the same hyphomycetes so that it cannot be used to determine the different types. Ceni believes that these changes are connected with the biological cycles of these fungi. *Aspergillus fumigatus* and *flavescens*, especially the former, cause severe rapidly evolving pellagra forms. *Aspergillus niger* and *ochraceus*, and especially the penicillia, represent the cause of the chronic forms. Ceni found that penicillia found in Germany and not active there get poisonous properties in Italy. Otto saw the pathogenic property of an *aspergillus fumigatus* of Italian origin reduced in Germany and disappear.

(19) Ceni adheres to the claim that the substratum (medium) on which the fungi grow is free of the poison-producing substances, which, however, is firmly denied by Gosio and others. The periodicity of the poisonous property of the hyphomycetes is disputed from many sides (Paladino, Blandini, Tiraboschi, Pighini and Ravenna). Several investigators also deny absolutely the toxic property (Stürli); whereas the same is accepted by others, as by Alsburg and Fossati. The latter observed that the toxic properties can be accentuated by toxins of a coli-like bacillus isolated from corn-bread.

(20) From a historical point of view, Carraroli may be mentioned, who for many years labored with the problem of the ætiology of pellagra. He believes that it is caused by a pleomorphous organism. His doctrine is, however, on such a foundation that it cannot be given any scientific consideration.

(21) In Italy the Commissione Pellagrologica could not find any connection between simulia and pellagra. Physicians who practice in pellagra regions made the same observations (Grillo, Ceresoli, Terni). Pellagra is frequent in the lowlands of Lombardy and Veneto, where there are only stagnant waters which offer no favorable conditions for the larvæ of simulia. Babes found in Roumania regions full of simulia without pellagra; for Bessarabia Mitchnik denied the connection of the disease with this insect; the same views are represented in America by Niles, Beal, Ravitch and Hunter. The zoologists found that in North America simulium reptans is absent. With regard to Sambon's theory, we may remark that all proof is lacking that pellagra follows the bite of the simulium in pellagra regions. Whereas laborers are attacked by pellagra, other persons, such as managers, are spared, although they often remain

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with them in the field, and are also bitten by the simulium. This fact is difficult to explain by Sambon's theory. It does not hold for other diseases of protozoic nature, for instance, malaria. We further may add that the above-mentioned Commissione Pellagrologica Ministeriale advances against Sambon's theory the observation that it has never found any pellagra cases in infants. The parasitic nature of the corpuscles found by Sambon in one case in cells of the cerebro-spinal fluid is not proved as yet. The opinion of Ravitch that the agent producing pellagra might be a trypanosome carried over to man by the prick with the bill of blackbirds deserves only a passing mention. The adherents of a protozoan theory claimed indirect support in the observation that the Wassermann reaction in pellagra cases frequently is positive. Control experiments by Vallardi, a pupil of Devoto, show, however, that that is not the case.

(22) In order to make as complete an enumeration of these theories as possible, I recall that Rameau ascribes pellagra of the country of "Landes" to a parasite which is transferred to man by the skin of the sheep. A short time ago Manning described a psylosis pigmentosa which he ascribes to pellagra and which he claims is transferred by clothes.

(23) Zuntz claims that a corn diet calls for a great increase of the oxygen consumption, about 25 per cent.

(24) The results of these general statistics are supported also by more circumscribed ones. The 22,000 pellagra cases in the province Padova, in the year 1899, came down to 10,000 in the year 1909 (Alpago Novello). In the provinces Pesaro and Urbino (D'Ormea) and in Lombardia (Bezzola, Terni, Perroncito) pellagra has receded considerably.

(25) The often mentioned prominent pellagrologist, G. Strambio, occupies himself with the mental phenomena of pellagra, and writes "delirium duplex est, unum acutum, dinturnum alterum.

Primum ad paucos protrahitur dies non sine vitæ discrimine, febri stipatur irregulariter exacerbante cum pulsu celeri et duriusculo. Delirium diuturnum modo amentia, modo mentis stupiditas, modo melancholia dici potest.

In prima pellagrosi ad recte ratiocinandum inepti omnia prætermittunt rident, lugent. In secunda . . . . stupidi et obliviosi ne objectorum quidem impressiones attendunt.

Tertia tandem, quæ est fræquæntior, sæpe religiosa est, attonita, errabunda et tristis. Etenim nonulli judicia Dei metuentes diem et noctem preces fundunt, alii cogitabundi et immobiles interroganti minime respondent, plurimi hominum frequentiam fugiunt, quo vadant nesciunt, nec desunt qui eo deveniant ut vitæ pertæsi se laqueo suspendant aut præcipites in puteum descendant." As we turn over the leaves of the handbooks of psychiatry we find that Tanzi believes that the psychosis which regularly occurs in pellagra is amentia. The same opinion is represented by Bianchi, but he remarks that these psychic symptoms are of very variable nature. A. Marie accepts confusion as the most frequent symptoms, but he also found often depressive states of stupor. Kraepelin writes, "the mental

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disorders show the picture of increased emotional irritability; moreover depressive states, of uniform course with dullness, scanty delusion formation, marked tendency to suicide, and termination in deterioration, and finally confusion with excitement." He, however, leaves open the question whether all these forms constitute a clinical unit, and are solely to be traced to the effects of toxins. Among the other investigators Finzi believes that all the mental phenomena of pellagra are to be referred to the picture of amentia. Vedrani expresses himself to the effect that they have certain peculiar tracts, many of which I could confirm. Ziveri accepts two forms, an amentia and a depressive type. Gregor divides them into seven groups (1) simple pellagrous neurasthenia; (2) severe neurasthenia with depression and delusions; (3) confusion; (4) acute delirium; (5) catatonic dementia; (6) melancholia; (7) circular forms. Kozowski found in 90 per cent of the cases amentia, in 8.7 per cent melancholia, in 1.3 per cent catatonia. Williams considers amentia as the psychosis of pellagra.

(26) Bouchard wrote that pellagra was a "matière sans forme"; a disease without form is in the language of the scholastics an impossibility, a thought worthy of one who has lost his way in the depths of the school and in metaphysical mists. This judgment is certainly too severe, but one must admit that the symptomatology of pellagra is really not uniform. Nils even writes that in order to describe pellagra one would require the imagination of Carlyle and the pictorial expressions of Macaulay.

One of the most important objective findings, the erythema, is not to be found in every stage of the disease, and has not in every case characteristic features. The seat of the erythema is dependent on the accessibility to the sun's rays, therefore it is most frequently found on the dorsum of the hands. Even Strambio wrote: "hinc sæpe accidit ut agricolis qui dum agrestis incumbunt laboribus soluto indusii collari, inversis manicis et calceis detractis procedunt collum, ingulum, sternum, brachia, pedum dorsus et tibiæ hujusmodi quoque corripiantur desquamatione." In Roumania, where peasant children expose themselves almost naked to the sun rays, the erythema spreads over the whole body; therefore neither the "gloves," nor the "collar," nor the "neck butterfly" has a decisive diagnostic value. Merk, who studied the principal phenomena of pellagra for a long time, admits that many alcoholics erythemata can be observed which are very easily confused with those of pellagra. Majocchi found certain distinctions between the erythemata of pellagra and of alcoholics. In the alcoholic it forms (a) no sharply limited glove on the dorsum of the hand; (b) it lasts longer, and comes to the pigmentary stage later; (c) it appears in any season; it also lacks the collar and the changes in the face show the marks of telangiectasis. Professor Bosellini told me verbally that in Bologna he saw erythemata in alcoholics which could certainly not be distinguished from the pellagrous forms, especially in years in which wine was extremely cheap. In the advanced stages of many psychoses there also are changes of the skin which are similar to those of pellagra. Baillarger spoke of the so-called pellagra of the insane.

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(27) Antonini injected the blood of pellagra patients into rabbits, and Gosio intracranially into pigeons or mice, and they claim to have proved that this blood was more toxic than normal blood; but this method cannot be brought under consideration for diagnostic purposes. Gosio published a precipitation method based on the relation between corn and pellagra, a relation which we have already designated above as rather loose. The poisons of the hyphomycetes injure the intestinal epithelium so that corn albumens without being previously subjected to digestive processes enter the circulation, form antibodies which exert a precipitating quality against corn albumen solutions. These precipitins are absent in the blood of non-pellagrous corn consumers because their intestinal tract is normal. Rondoni and Raubitschek found, however, that this reaction is specific neither for pellagra nor for corn consumers. These precipitin reactions are probably to be connected with the observations of Vilenko, who found that many plant proteids form precipitates in contact with animal sera. D'Ormea and Gatti found that the serum of the pellagrous formed precipitates with the extracts of emulsions of internal organs of pellagrous cases. Lucatello immunized rabbits with blood serum of pellagra cases and found that the serum of the rabbits acquired the property of causing precipitation with the serum of such patients. He himself, however, admits that the precipitation is not specific, a thing that was to be expected. Experiments with deviation of complement were tried by Lucatelli, Carletti, Alvisi, and the Pellagrological Commission of Illinois. The tests turned out in such a manner that one can speak neither of a constant nor of a specific reaction. Rondoni found no specific reaction of deviation of complement with corn extract and antigen. The anaphylaxis reaction used by Volpino is found non-specific by many others. As has already been mentioned in the lecture, Volpino and his collaborators observed in pellagra cases on injection of watery extract of spoiled corn phenomena of hypersensibility (increase of the temperature above 38 per cent, stupor, excitement, acceleration of the pulse and respiration, vomiting, diarrhoea, and in many cases the appearance or aggravation of cutaneous symptoms). A short time ago Volpino communicated the fact that it is possible to obtain a substance from healthy corn by means of precipitation with alcohol and extraction which in animals fed without corn does not have any toxic effect, whereas it has a toxic effect when the animals are fed with corn. This substance, called pellagrogenina, is water-soluble and does not lose its toxic properties by heating. 90 per cent of the pellagra cases react strongly to the injection of a one per cent solution of this substance. In 100 non-pellagra patients only 20 per cent reacted positively. The watery not precipitated extract of healthy corn causes no reactive phenomena in contrast with the extract of spoiled corn. As a consequence Volpino assumes that in the watery extract of healthy corn there may occur other substances beside pellagrozein inhibiting the reaction. The experiments of the Pellagrological Commission of Illinois, aiming at reaction of local oversensibility with healthy or spoiled corn extract or with aspergillus fumigatus, have failed. Hirsch-

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felder had the same experience. The mejostagmyn reaction gave no results.

(28) I should like to mention here that Gaetano Strambio has already made this observation. As a matter of fact he wrote: (Dissertazioni sulla pellagra, 1794, p. 16) il delirio dei pellagrosi non è accompagnato da quel furore, da quell'audacia . . . . che caratterizza la vera mania.

(29) Certain investigators have been of the opinion that pellagra cases pass the germ of the disease to the children. Strambio, however, thought that children only got the predisposition to the disease so that they might be attacked earlier than the parents. Tizzoni tried to revive the old conception of heredity because he finds his streptobacillus in the tongue of one of the female guinea-pigs infected by him. The finding does, however, not mean more than that this microorganism is transferable, but it cannot have anything to do with the heredity of pellagra. Moreover it is necessary to first get a demonstration of its specificity for the disease. Also the experiments of Ceni, who derives from the eggs of normal hens 88 per cent normal chickens, and from those fed by spoiled corn or emaciated only 29 per cent, proved only that the poor organic condition of the progenitors influenced the chances of development of the progeny.

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PSYCHIC DISTURBANCES ASSOCIATED WITH DISORDERS OF THE DUCTLESS GLANDS.*

By HARVEY CUSHING, M. D.,
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During my last two years in Baltimore I saw rise from the ground the clinic whose inauguration we are here to celebrate, and in this interval became acquainted in a measure with the methods of examination pursued by its director, whose sympathetic interest in our surgical performances and study of the mental aspects of some of the patients under our care served to show my immediate associates and myself the great value of these analyses, which from our insufficient training we had perforce neglected.

But in spite of my many obligations to Professor Meyer, his compelling invitation to participate in these exercises other than as a sympathetic listener would nevertheless have been refused had it not been for the chance coincidence of its reception with the following episode, which furnishes me with the text on which I shall venture to speak.

A physician of one of the large Massachusetts hospitals for the insane, after the perusal of a monograph in which occurred certain vague statements regarding the mental characteristics of individuals suffering from disorders of the pituitary body, brought to the Brigham Hospital a number of photographs and clinical histories of patients who had been under his observation and asked whether any of them promised to be worthy of investigation from the standpoint of a primary or coincident derangement of the internal secretions. One of his case records fully analyzed the mental status of an individual in whom recently acquired adiposity, lethargy and polyuria were conspicuous features, and as chance would have it there happened to be under our own care the physical counterpart of the asylum inmate—a patient, however, whose case history had been elaborately worked out from the standpoint of a secretory disorder but in which only fragmentary comments had been made on the associated psychoses.

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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This Brigham Hospital patient, J. H., is a man of 38 with an extraordinary degree of obesity, polyuria, a high assimilation limit for sugars, and radiographic evidences of an hypophysial lesion.

About five years ago he first began to grow stout and drowsy, and in the words of his wife would "come home and sit around and say nothing and read nothing, but would worry, cry and insist that he was incurably ill." Various diagnoses were made, which confused and alarmed him. He became impotent.

During his periods of depression he would stop work and then try to resume it under various conditions of employment, but would again become lachrymose and discouraged and desist in the attempt. This went on for some three years. In January of 1911 he secured his last temporary job in a butcher's shop, but drowsiness would overcome him even when driving the cart and he was discharged.

His wife describes two kinds of somnolence. From his usual nocturnal sleep he could be easily aroused without showing irritability; but from the lethargic spells which occurred during the day it was almost impossible to fully awaken him, and he would strike out at the nearest persons, crying "Get away!" During these periods of deep, overpowering diurnal sleep he would at times respond to questions, though without subsequent recollection of what had been said.

Two weeks before entering the hospital he suddenly complained of being lonely, wanted a light in every room and demanded that his wife play and sing to him and that his relatives be called in, for he was "never going to get well."

The counterpart of this individual—the patient at the Danvers Asylum—has gone through a very similar preliminary period of hypersomnia with rapidly acquired adiposity. His associated mental symptoms seem to have been no more marked than in the case of J. H. recorded above, until a year ago when after an injection of salvarsan, given for no apparent reason, he became acutely deranged. In his non-somnolent periods he now shows a good-natured distractibility with disorientation and sexual obsessions.[1]

This episode merely illustrates a common failing—the tendency of a specialist to narrow his attention to those aspects of his patient's condition with which he is most familiar, while other and possibly contributing factors in the symtom-complex remain out of focus. The experience, however, plainly intimates the existence for the psychiatrist of a little used point of contact with internal medicine and, as others have already seen, a possible bio-

[1] Both of these individuals are afflicted with an hypophysial and possibly with a polyglandular insufficiency, of which obesity is the most obvious physical expression, and in view of the associated mental symptoms it is of interest to recall that Vitaut added a fourth—namely psychoses—to the three cardinal symptoms under which Dercum first described "adiposis dolorosa."

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chemical explanation for that considerable proportion of the mentally deranged in whom, as experience has shown, a post-mortem examination is likely to reveal no obvious organic lesion in the central nervous system. It indicates also for the clinician—who too often looks upon the individuals under his care as essentially visceral rather than as cerebrate organisms—the necessity for the same routine analysis of his patients' mental status that is commonly given to the alimentary, circulatory, excretory, neuromuscular and other functions.

Many of us—and perchance this applies more particularly to those who are manually inclined—have long reconciled ourselves to the mental characteristics which rendered us as collegians incapable of the successful pursuit of psychology, and as prospective physicians equally awkward in meeting the elusive psychiatry on a social footing though we may have had a bowing acquaintance with her relative, neurology. But these subjects, under such favorable opportunities of presentation as will be afforded by the Phipps Psychiatric Clinic in direct connection with a university hospital, will doubtless prove as intelligible and be as eagerly followed by the average student as any in the curriculum. They are unquestionably as important, for our patients do not prove to be solely visceral organisms, and it behooves not only the physician but the handicraftsman also—as perhaps Crile more than any other of my surgical confrères has appreciated—to realize the existence of a psychic organization in the background of even surgical maladies.

Unconsciously or otherwise all clinicians are phychotherapeutists, and undoubtedly he is the more successful with his patients who effectively uses this agency to allay the individual's morbid depression or doubts, anxiety or fears. A certain functional superstructure builds itself on even minor ailments. Of this we are all more or less appreciative. At times these so-called functional symptoms may be paramount, even when the associated organic lesion is more or less obvious; and some of us, with greater or less skill, may satisfactorily analyze and even partially dissipate them, while the underlying disorder remains unassailed.

This is even more apt to be so when the primary lesion is an intracranial one. Thus the clinical histories of a long series of cases of brain tumor have shown that a large percentage of the

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subjects at one time or another in the course of the disease have been regarded as the victims of a functional psychoneurosis, and the same is doubtless true of many other extracranial organic disorders which cannot be diagnosed off hand. Conversely, it is even more common for a physician or surgeon to eradicate or otherwise treat the obvious focus of disease, with more or less success, and to leave the mushroom of psychic deviations to vex and confuse the patient for long afterwards, if not actually to unbalance him. Unhappily for those of us who lean upon instruments of precision there is no acceptable psychometer from which we may take readings—nor will there be.

All of this is doubtless very trite, though it bears, as I shall endeavor to show, upon the more specific subject matter of this paper—the internal secretions and their effect upon mental processes.[3]

We are coming to realize more and more that new interpretations of certain conditions of disease, new avenues of investigation, new lines of therapy, are being opened up by the present intensive studies of the ductless glands and their chemical correlation. There has been a rush for this opened door, particularly on the part of clinical therapeutists lured on by high-sounding proprietary preparations, and unless restraint is exercised there is every danger that the experience of Brown-Sequard and the Elixir of Life will be repeated in the case of other glandular secretions.

Acknowledging the close functional interrelation, whether as protagonists or antagonists, of the ductless gland series, it is nevertheless safe to assume as a working basis that for each member of the series a state of overaction or of underaction produces its peculiar symptom-complex.

Some of these syndromes are now well recognized, particularly those due to glandular insufficiencies, for the secretory deprivation may occur in man as the result of disease or surgical ablation, or

[3] Attention should be called to the following admirable and suggestive papers on this same subject:

Arthur Münzer: Ueber die Einwirkungen der Blutdrüsen auf den Ablauf psychischer Funktionen. Berl. klin. Wchnschr., 1912, xlix, 582, 649. Ueber die äetiologische Bedeutung psychischer Insulte bei Erkrankungen der Blutdrüsen. *Ibid.*, 1165.

L. v. Frankl-Hochwart: Ueber den Einfluss der inneren Sekretion auf die Psyche. Med. Klin., 1912, viii, 1953.

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its counterpart may be produced in animals by experimental removal of the structure in question. Thus eunuchism, Addison's disease, pancreatic diabetes, myxoedema and the cretenoid state, tetany, the so-called adiposogenital dystrophy with infantilism, representing hypophysial, and the precocious skeletal and sexual development, representing pineal deprivation, are known to be clinical expressions of a primary deficiency of individual glands.

Less well recognized—for we cannot as yet reproduce them experimentally—are the constitutional manifestations of a perversion or excess of secretion, Graves' disease and acromegaly being the only acceptable illustrations of such states; whereas we are but feebly groping for the characteristic syndromes representing primary functional hyperplasias of the thymus, of the adrenal bodies, of the interstitial cells of the reproductive glands and so on.

With this conception that a primary secretory derangement, in one or the other direction, of each member of the series is coupled with its own peculiar and recognizable syndrome, we are not blind to the fact that there may lurk in the background, particularly in the case of the glandular hyperplasias, either some underlying biochemical disorder of nutritional, infectious, or otherwise toxic sort, or some primary derangement of the nervous system itself. In the case of the thyroid, for example, exophthalmic goitre with its outspoken nervous and psychic manifectations was formerly regarded as essentially a sympathicogenic or psychogenic disorder, and among others Biedl has again come to support this view as opposed to that of Moebius. Unquestionably the mental repose from successful psychotherapy on the one hand, and on the other such a radical measure as the blocking of secretory impulses to the gland by cervical sympathectomy, have both served, in many cases, to ameliorate the symptoms almost as effectively as the now popular partial extirpation of the hyperplastic gland itself. Cannon's experimental studies have given evidence that the secretory discharge of one of the glands—the adrenal—is influenced by way of the sympathetic system through an emotional excitation. Abundant clinical experiences have shown that psychic traumas play an important rôle in hyperthyroidism; and Weed, Cushing and Jacobson's demonstration in animals of an autonomic control for the pituitary body by way of the cervical sympathetic, similar to that for the adrenal gland by way of the

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splanchnic fibers, indicates that this structure also must be taken into consideration when interpreting the results of emotional discharges of the glands of internal secretion, at least when measured by the consequent glycosuria.

Within normal physiological limits individuals differ greatly—by right of inheritance, by the cultivation of inhibitions, through circumstances of disease, and in other ways—in the character and degree of their secretory response under the influence of the primitive emotions. It has become popular to speak of the sympathicotonic individual, in the sense of Eppinger and Hess,* as one in whom these discharges easily occur, and the vagotonic or more phlegmatic individual as one who responds less readily to the same stimulus. Both may be physiologically normal, but the former is emotionally or autonomically the more unstable, and under mental stress more easily becomes glycosuric or exophthalmic and shows polyuria, palpitation, hæmodynamic responses and so on—symptoms which under especial psychic durance may acquire a sufficient chronicity to lead to a so-called symptom-complex of disease.

Dr. Smillie, an assistant of my colleague, Prof. Christian, has made an interesting observation on the urine of a group of students before and after the emotional strain of a written examination. A transient glycosuria was demonstrable at the end of a difficult three-hour examination in five out of 14 students, and after a less severe two-hour test, in three out of 20 students. These doubtless represented the sympathicotonic members of the group, who happened to possess a storage of available glycogen at the time of the experiment, but whether the emotional discharge affected more the adrenal, thyroid or hypophysis, or all of them equally, can only be surmised.

Certain observations in my own laboratory conducted by Dr. Bagley suggest that after extirpation of the superior cervical ganglia, with consequent blocking of secretory impulses to the pituitary gland, the animal acquires an increased sugar tolerance with a tendency to the deposition of fat, such as occurs after

*Individuals who react strongly to atropin and pilocarpin are insensitive to adrenalin, and conversely individuals who show evidences of strong sympathetic irritation to adrenalin are resistant to the effects of pilocarpin or atropin.

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actual posterior lobe extirpation; and thus we may possibly be able to diminish an individual's relative sympathicotonicity and to lower the threshold of glandular discharge in so far as it is affected by emotional stimuli. Indeed it has always seemed probable to me that the beneficial effects of vascular ligation in Graves' disease may be due to the division of the sympathetic fibers to the gland rather than to the lessening of its blood supply—to which such improvement as occurs is usually attributed.[4]

These things all tend to emphasize the fact, of which you are already aware, that psychic conditions profoundly influence the discharges from the glands of internal secretion, but we are on a much less secure footing when we come to the reverse, namely the effect on the psyche and nervous system of chronic states of glandular overactivity or underactivity.

However, inasmuch as an established secretory disorder on the part of each individual gland leads to certain clinically recognizable chemicophysical alterations in the body, it is fair to assume that each of the resultant clinical types will exhibit more or less characteristic mental deviations; for the influence of the somatic condition on the mind is certainly as great as that of mind on body. These disturbances naturally enough are particularly apt to occur during periods of physiological stress, such as accompany puberty, the climacteric and pregnancy—states in which there are profound alterations in the functional activity of the glands of internal secretion with a necessary readjustment in the chemical balance of the body, which must in more or less nervously unstable individuals have a profound effect on their psychic organization.

Of late years attention has been largely concentrated on thyroid disorders, for reasons which are quickly apparent. The gland is so situated that changes in its form through hyperplasia or atrophy are often observable; its accessibility has made it the subject of surgical attack, so that the consequences of glandular deprivation have been made clear; in short we have come to recognize, under the influence of Moebius, states of hyperthyroidism versus hypothyroidism even in their more or less incipient or

[4] It is possible on this basis that a bilateral sympathectomy may prove to be a no less promising form of treatment for acromegaly in its acute stage when glycosuria is an expression of the disorder.

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transient stages, and to appreciate more or less clearly that each of these states is accompanied by a greater or less deviation from the normal mental poise, depending on the severity of the disease and the relative stability or otherwise of the individual's nervous system.

It is quite probable that in similar fashion a disorder primarily involving any other member of the ductless gland series leads not only to its peculiar somatic alterations but also to an accompanying and characteristic mental change. Castration, for example, unquestionably modifies the psychic as well as the physical attributes of an individual, but even in this well-known illustration of the consequences of glandular deprivation it is not entirely clear how much is due to the loss of the purely reproductive, and how much to the loss of the interstitial cells on which the secondary sexual characters depend. Even less well understood are the effects on the nervous system of disorders of other glands. Psychic disturbances, in the nature of acute hallucinatory confusion, accompany parathyroid tetany as described by Frankl-Hochwart; diabetes has its psychasthenic symptoms; Addison's disease too has its characteristic psychoses, and the interrelation is emphasized in this connection by the fact that anencephaly is accompanied by an extreme aplasia of the adrenal cortex.

All these things are merely suggestive, and not until a wide experience has made it possible to analyze these conditions in a large group of patients, rather than as isolated individual experiences with a few cases, can their peculiar physical type and the characteristic mental deviations brought about by the altered chemistry of the tissues be attached in turn to disorders of the less well observed glands, as has been done in the case of the thyroid.

However, in regard to the psychoses associated with derangements of one of these structures—the pituitary body—I may venture to speak with a little less vagueness. It has been said elsewhere[1] that in the general run of patients suffering from hypophysial disease some deviation from the normal mental balance may occur, for two distinct reasons. One of these is the implication of the structures not only of the interpeduncular region but even of the frontal lobe and possibly the corpus

[1] The pituitary body and its disorders. J. B. Lippincott Co., Phila., 1912.

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callosum, through the slow pressure deformation brought about by a tumor, whether the growth, in the character of a glandular hyperplasia or adenoma, actually originates from the hypophysis itself, bursts through its dural capsule and thus invades the cranial chamber, or whether it originates in some extrasellar or infundibular anlage in consequence of a fault connected with the development of the pituitary body. In the latter case the cerebral disturbances need not be unlike those which accompany a tumor of any sort implicating this part of the brain, and dispositional changes, disorientation and so on are not uncommon. Indeed, from observations in a series of patients with primary frontal lobe tumor we are convinced that though the intellectual faculties suffer most from a lesion affecting the leading hemisphere, nevertheless the indications of a right frontal involvement are almost equally characteristic, and over-familiarity, untidiness, facetiousness, with a peculiar indifference to or lack of appreciation of the character of the malady are common.

The other, and in our present connection more important, cause for psychic change is attributable to the alteration in the secretory activity of the gland itself, irrespective of a co-existent tumor formation. Indeed, after experimental deprivation of the gland marked dispositional changes occur, though admittedly they are difficult to measure or describe in the case of the lower animals.

The effect on the mind of the hypophysial hyperplasias, physically recognized as gigantism and acromegaly, may deserve first consideration, though outspoken grades of the former state are comparatively rare. The mental attributes of the pathological giant have often been portrayed. Rabelais has done this for us, and, as Dock has well said, we recruit from giants more drum-majors than prime ministers. The giant Turner, the single striking example of this condition occurring in my series, had never learned to read or write, and though possessing shrewdness and self-reliance—by no means a simpleton—he was nevertheless dull, lethargic and indifferent at the time he came under our observation.

The acromegalics, apart from their early subjective discomforts, possibly suffer from as distinct psychic changes as do the victims of hyperthyroidism, and though a considerable percentage of the cases I have studied have been in a stationary stage of the

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disease or had begun to show signs of actual secretory insufficiency, others were struggling against the despondency and hypochrondriasis so sympathetically pictured by Dr. Leonard Mark in the record of his personal malady.[8]

He graphically describes the recurring periods of "feeling acromegalic"—periods in which there was an intensification of the sensation of hopelessness, lethargy and depression, and which in an individual who faced the struggle of life with less courage might easily have led to self-destruction. One of my own patients, also a man of refinement and education, has likewise written a detailed account of his personal experience with the disease and tells the story of his fight against the psychic incapacitations of the malady in very similar vein. He had been, if anything, intellectually precocious, had entered college at an early age and was valedictorian of his class; and the "slowing up" of his mental processes, with the onset of his now outspoken disorder and the periods of "feeling his acromegaly" more than at other times, are experiences akin to those of Dr. Mark. On the whole a courageous optimism in the face of physical adversity has characterized both of these individuals, and I judge that as a rule it is rather characteristic of the disorder.

Only three of the 30 or 40 acromegalics in the series have shown mental aberrations which were outspoken. These were hypersensitive women and all three were in a fairly acute stage or recrudescence of the malady. In one of them fits of despondency with the threat of suicide were sufficiently pronounced to justify the suspicion of manic-depressive insanity. Her acromegalic changes had become apparent before the birth of her third child, and her psychoses were perhaps intensified by the fact that this child became physically and sexually bizarre—a matter to which I shall return in considering the transmissibility of these secretory disorders. She ultimately committed suicide. The recent literature contains frequent allusions to similar mental deviations in the victims of acromegaly, and I presume that a sprinkling of acromegalic individuals will be found in the case records of all asylums and psychiatric clinics.

[8] Acromegaly: a personal experience. Balliere, Tindall & Cox, London. 1912.

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Realizing as we do, through the observations of Erdheim, Stumme and others, what extensive cellular changes occur in the pituitary body during pregnancy, it is quite possible that many of the psychoses or insanities associated with this state are coupled with disturbances of the internal secretions. It should be emphasized, however, that in pregnancy as well as in the active stages of acromegaly which we have been considering we are probably dealing with the effect of hypersecretion on the mental processes, for those cases of acromegaly which in their later stages pass over into what may be called pituitary myxœdema are characterized more often by the drowsiness and indifference and even euphoria of hypopituitarism.

In the case of the hypophysial insufficiencies we have a condition capable of experimental reproduction in the lower animals; and the adiposis, hypersomnia and sexual dystrophy which commonly follow the removal of the pituitary gland in adult animals, and the persistent infantile aspect and behavior of those deprived of the gland early in life, are the counterparts of the conditions seen in human beings afflicted with a corresponding secretory insufficiency due to tumor, anomaly or disease.

The complexities of the subject are considerable, on physical as well as psychic grounds—much more so than, for example, in the case of the thyroid deficiencies represented by cretinism or myxœdema. A number of physical types are recognizable, depending on whether the process antedates or follows adolescence, on whether or not there is a complicating dystrophy of the sexual sphere, or on whether or not there is an accompanying adiposity—for there is a lean as well as the now commonly recognized fat type of these individuals. Moreover, we are dealing with a dualistic structure, and are as yet merely groping toward a clinical differentiation between disorders of the separate lobes of the gland —pars anterior, intermedia and posterior.[1] Then too the glandular incapacitation may be brought about by a number of different agencies—by remote intracranial lesions, particularly those which occasion an internal hydrocephalus and implicate the gland through the medium of cerebrospinal fluid stasis; by the direct pressure of tumors which are immediately superimposed, these

[1] Concerning the symptomatic differentiation between disorders of the two lobes of the pituitary body, etc. Amer. Jour. Med. Sci., 1913, cxlv, 313.

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usually being congenital cystic growths arising from an anlage of Rathke's pouch; and, lastly, by those cellular enlargements, hyperplasias or adenomas of the gland itself which from lack of a better understanding of their nature I have grouped under the old term of "struma"—a goitrous condition of the pituitary body.

As a rule most of these individuals become distinctly vagotonic, the skin is dry, delicate and comparatively hairless, there is an abnormally high assimilation limit for sugars, coupled often with an unusual deposition of fat, the temperature tends to be subnormal, and they are apt to show a mental and physical inactivity, at times amounting to lethargy. They appear, moreover, to have a special predisposition to epileptiform attacks; and this, it may be added, is characteristic also of hypophysectomized animals. It is not at all surprising that pathologists who have found congenital suprasellar tumors in the interpeduncular space accompanying these states have postulated centers for somnolence, diuresis, glycosuria and so on in the tuber cinereum, to involvement of which, rather than to an implication of the supposedly unimportant though adjacent hypophysis, the various symptoms have been attributed,

Had it not been for the fact that in the presence of tumor certain recognizable types, physical and mental, actually occurred, we could not have ventured to ascribe similar types, in the absence of neighborhood symptoms,[8] to an implication of the pituitary body. This, of course, is but a repetition of our past experience with cretinism and myxœdema. In the syndrome to which Fröhlich first drew general attention, a tumor—often from a congenital pharyngeal anlage whose presence may or may not be evidenced by a radiographic enlargement of the pituitary fossa or by optic atrophy with hemianopsia—is accompanied by an infantile skeletal configuration with tardy epiphysial union, an abnormal deposition

[8] In the examination of patients with hypophysial disease it has become a convenience to subdivide the symptoms into (1) those produced by the local pressure effects of the growth on neighboring structures, chiasm or oculomotor nerves, uncinate gyrus and so on; (2) those the consequence of an increase in intracranial tension—choked disc, headache, or other pressure symptoms, which are usually late manifestations if they occur at all and which are frequently due to obstruction of the foramina of Monro from an enlarging growth; (3) the evidences of secretory derangement on the side of hyper- or hypopituitarism; and (4) the polyglandular symptoms attributable to a coincident or secondary involvement of the correlated glandular structures.

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of fat, and delayed or imperfect acquirement of the secondary sexual attributes—the so-called adiposogenital dystrophy.

However, even in the demonstrable presence of one of these tumors with symptoms which antedate adolescence, the clinical picture is capable of kaleidoscopic variations, both from the physical and mental standpoint. The dull, lethargic, fat child, efforts to stir whom into some sort of competitive activity are futile, may, from a skeletal standpoint, be overgrown instead of infantile. A fairly normal adolescence may have been acquired and the individual may marry and beget offspring and lead a normal mental life before actual signs of glandular insufficiency appear. He may never go through the lethargic, adipose phase, or indeed even in this phase may show intellectual precocity rather than the reverse.

A few illustrations may be given.

A child 9 years of age, of Jewish parentage, one of a family of six otherwise healthy children, first came under observation *March 28, 1912*, with the complaint of headaches and cessation of growth. She was apparently normal in all respects until her fifth year, when she had an attack of measles, followed by purpura hæmorrhagica. She subsequently suffered from headache and frequent epistaxis. She became exceedingly fat, weighing 60 pounds at 6 years of age. There was no subsequent increase in stature, and when she was 9 she wore the same sized frocks that she had worn three years before. She was regarded as a sporadic cretin and thyroid preparations were administered.

Intellectually she was rather a precocious and mature child, much "smarter" at her lessons than the other children, with whom she was disinclined to romp and play, preferring the company of adults. She behaved like a prim little old lady—resembling a doll, with the gestures, ways and expressions of a grown-up. During her periods of cephalalgia she was apt to be irrational with vivid auditory and visual hallucinations.

Examination showed a chubby child, 44 inches in height (6 inches below the normal for her age), and weighing only 42 pounds (a loss of 20 pounds in three years).

A radiogram clearly showed a nodular tumor (doubtless a teratoma) perched above a sella turcica of normal outline. Epiphysial ossification and second dentition were backward. There was a low grade of choked disc but the visual fields were normal.

On *August 9, 1912*, a futile attempt to expose the tumor by a subtemporal operation was abandoned as a simple decompression after the ventricle was punctured, revealing a hyprocephalus. The decompression served to relieve her general pressure symptoms, but before her discharge the perimeter disclosed a relative scotoma of both upper temporal quadrants—the earliest stage of the bitemporal hemianopsia characteristic of a chiasmal lesion.

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She returned two months later owing to a return of pressure symptoms; she was disoriented and had active hallucinations, followed after some days by a series of convulsions, Cheyne-Stokes respiration and unconsciousness, due presumably to an acute obstructive ventricular hydrops. A callosal puncture was attempted, but as might have been surmised no fluid was encountered in the third ventricle and recourse was had to drainage of the lateral ventricles under the scalp.

This temporizing measure has proved more effective than usual in relieving, up to the present time (6 months later), the pressure complications of the hydrocephalus.

This is a typical example of hypopituitarism accompanying a congenital tumor (the syndrome of Fröhlich) with the combination of an unusual mental maturity and an infantile physique. The story moreover illustrates one of the not uncommon secondary complications of these cases.

The following is another example of early hypopituitarism, also interesting from the standpoint of mental precocity.

A young man, 23 years of age, was referred to the Brigham Hospital in *March, 1913,* owing to threatened blindness from a primary optic atrophy. One of a large family of children of average stature and intellect, he was always regarded as exceptional, not only because of an unusual mental alertness but also from his peculiar avoidance of youthful companions, especially those of the opposite sex.

He went through school and entered a medical college, where he graduated at the age of 21 with the highest honors they had ever given, though so nearly blind during his last two years that a professional reader was required. He has not experienced any especial drowsiness.

Physically he is an undersized, moderately adipose, beardless and boyish looking individual, with the extreme physical *typus femininus* characteristic of these states in the male when they antedate puberty and are associated with the imperfect acquirement of the secondary characters of sex.

Though free from discomforts other than an occasional mild headache, the neighborhood signs were nevertheless pronounced, the x-ray disclosing obliterated sellar outlines, the ophthalmoscope a primary optic atrophy, and the perimeter a clean temporal hemianopsia with loss of macular vision in the one eye in which there was some retained sight.

At operation a large portion of the usual soft hypophysial struma was removed. This was followed by rapid (4 days) and almost complete restoration to normal of the visual field in the previously hemianoptic eye, with re-establishment of reading vision.

This example illustrates further that the personal oddities accompanying these disorders are not incompatible with an intellectual activity equal to or possibly exceeding the average.

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Another patient in my series, of a similar physical type, had been an instructor in English in one of the leading colleges. He had never fully acquired his secondary characters of sex, and had a typical feminine type of skeleton with corresponding fat deposition. He was unmarried. Though a good student and a clever writer he had always been regarded as having a somewhat bizarre personality, but pronounced mental deterioration did not appear until his third decade, coincident with an invasion of the intracranial chamber by the growth. Still another patient who has been under observation for two years with an inoperable pituitary adenoma, had been a successful physician until at the age of 38 he began to lose his vision and to show signs of forgetfulness and drowsiness. He has since become blind and his present psychic state is well expressed by the following quotation from a recent letter sent by his observant wife.

"He continues mentally confused and disoriented; he sleeps most of the time and while asleep has incontinence of urine. The quality of the pulse is good but ranges from 60 to 70 and the temperature a little below normal. His strength keeps up remarkably well, but he becomes easily fatigued mentally and physically, and there is a listlessness of the whole body. I notice some tremor but this is not particularly marked. He occasionally has a dual consciousness of things; for instance this morning he declared most positively that there were two Miss Smiths (his nurse); and he has many queer delusions about being unable to walk or eat. He will often say, 'You know I can't get up because of my back,' or 'I haven't been up for weeks on account of my broken legs,' or again, 'Just how many weeks has it been since I have eaten anything?' One day he absolutely refused to take his tub bath, because he thought he was in Heaven and had given his word to someone here below that he would not, and no amount of persuasion could change his belief. Though blind he has mental vision, for he constantly mentions things that he 'sees' in the room, and of course they do not exist for us. He never expresses a wish or desire for anything, and is contented and docile and like a big, dull child. He always knows me but is often confused as to our little girl's parentage, and practically never knows where he is."

As a rule the dispositional changes in these individuals are not associated with any of the fretfulness, irritability, restlessness or distractibility which often characterize the secretory hyperplasias. They are, as Frankl-Hochwart has also pointed out, almost invariably contented, amiable and co-operative patients, often exhibiting an astonishing indifference to their malady. There would seem

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to be merely a retardation of mental activity comparable to the lowered metabolism of the tissues in general.

This, however, may be only the general impression gained from the particular individuals—though they are now some 60 in number—who have been under my care, for through the kindness of Dr. Bond I have seen several patients at the Danvers Asylum who were unquestionably suffering from what we would regard as hypopituitarism but who nevertheless exhibited a restless activity, with hallucinations, distractibility and so on—as was true of the individual whose case was the occasion of the episode recounted at the outset of this paper.

The following history of one of my patients is remarkable, in many respects, in showing the effect of glandular administration in these lethargic states which accompany glandular insufficiency.

A business man, 48 years of age, entered The Johns Hopkins Hospital *November 23, 1911,* with the following symptoms notable in his complaint—constant headache, great drowsiness, restricted vision, fainting spells, loss of potentio sexualis, great sensitiveness to cold, and polyuria.

The record of his family was remarkable merely from the standpoint of stature—many of them exceeding 6 feet in height. His father was 6 feet tall and weighed over 200 pounds.

There was nothing noteworthy about the patient's childhood and youth, though he had not been particularly rugged. He was never adipose. He married at 30, and became the father of four healthy children.

In 1905, six years before his admission, he received a severe blow in the face, which fractured his nose, and more or less constant headache and a noticeable loss of nervous energy dated from that time. He had previously been subject to occasional headaches. These symptoms progressed, and in 1907 a diagnosis of diabetes insipidus was made. In 1909 his vision began to fail, there was occasional diplopia, and a bitemporal hemianopsia was observed. At this time he had what was called a nervous breakdown. Osteopathy and a vigorous antiluetic régime were tried without avail.

Drowsiness, first noticed a year before his admission, had become the leading symptom. He grew utterly forgetful, was often completely disoriented, and there occurred a marked change in disposition, which is thus described: "Always very genial, sensitive and kindly, these characteristics have become exaggerated and he cannot bear the mention of sad or disagreeable topics—even such trifles as the killing of an insect offend him. He appears disinterested, without initiative, and often more or less irresponsible. He is utterly oblivious to his own illness and to the state of his business and financial affairs, as well as to the trials and ailments of his wife, for whom he was formerly very solicitous. For four or five years there has been a lowering of libido, followed by a complete loss of potentio sexualis, and with

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this change he has become overly modest. There has been no tendency toward carelessness or untidiness in dress or habits. Loss of memory has been progressive, and latterly he has not been able to recall the names of familiar persons, engagements, business affairs, etc."

Periods of polyuria and polydipsia had possibly justified the suspicion of diabetes insipidus, the urine having often amounted to 4 liters per diem.

There had been three or four peculiar "fainting spells" lasting from five minutes to half an hour, with sudden loss of consciousness but unattended by convulsions or preceded by a gustatory aura. He complained of being chilly even on the warmest days when others suffered from the heat. The skin was exceedingly dry, the hands and feet always cold to the touch. The temperature was persistently subnormal. There was extreme muscular enfeeblement.

Through all this period occasional waves of deep somnolence occurred—so deep, indeed, and with such slowing of breathing that on two occasions recourse was had to artificial respiration.

The physical examination, briefly, showed a fair-complexioned, spare man, 5 ft. 9 in. in height, weighing 138 pounds, with thin hair and scant beard and dry, parched skin. He was dull, apathetic and drowsy and unable to follow a consecutive train of thought. His speech was slow, drawling and incoherent. Temperature 96, pulse 60. He was much disoriented both for time and place. The x-ray showed a normal sella. There was bitemporal hemianopsia with primary optic atrophy, which had progressed to near-blindness in the left eye. The Wassermann reaction was negative.

On *November 30*, a week after his admission, he passed into a profoundly lethargic state, with a blood pressure below 100, a subnormal temperature of 96.5, slow pulse and feeble, shallow respiration of Cheyne-Stokes type, attended by considerable cyanosis. There were involuntaries.

Without an anæsthetic a subtemporal decompression was performed, under the misapprehension that the symptoms were manifestations of pressure. No increase of intracranial tension was disclosed.

His condition remained unmodified and two days later he was given a subcutaneous injection of pituitary (anterior lobe) extract. This was followed by a characteristic thermic reaction to 101° F. Four hours after the injection he roused from his lethargy, seemed fairly rational and asked for nourishment.

This was the turning point in his critical condition. The detailed history of the following months and the struggle to supply the sufficient and proper dosage of the glandular extract need not be gone into.

On *December 15* a transphenoidal operation with sellar decompression was performed, in the hope that the compressed gland might thus be relieved; and for some weeks there was a most unexpected betterment in his condition, both physical and mental, so that he was up, dressing and caring for himself, and taking exercise independently. During the succeeding month he remained for the most part perfectly rational and physically active. This was followed by an occasional period of somnolence, and finally he lapsed into his former lethargy, with disorientation, hallucinations and involuntaries

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as before. The feeding of glandular extract in large doses proved unavailing, and recourse was again had to intramuscular injections. Under these injections, given daily, he invariably improved, but their frequent repetition caused so much muscular soreness that they had to be discontinued.

On *February 9, 1912*, under primary anæsthesia the pituitary gland of a stillborn child was implanted in the subcortex, at the seat of the decompression, and glandular administration was discontinued. There was an unexpected and astonishing improvement in his mental condition, and Dr. Meyer's analysis at this time showed practically no deviation from the normal. His memory of past events was good and he had a peculiar subconscious recollection of certain hallucinations concerning his presence among relatives who were dead, and so on, which had disturbed him during his preceding months of somnolence.

He gained rapidly in strength, and was discharged, on *March 10, 1912*, apparently well, despite a tendency to nap in the afternoon, a continuance of polyuria, and unaltered neighborhood symptoms so far as the hemianopsia was concerned. He had been kept under observation during the full month in the expectation that the implanted gland might not actually have "taken."

On his departure he took a ten-hour trip to his former home, accompanied by his wife. He attended to all the details of buying tickets, hotel registration, payment of bills and so on, met his many friends, remembered and kept appointments with promptitude, and went about independently—indeed, from a psychic standpoint seemed an absolutely normal individual, "like his old self."

A return of his drowsiness then began to be apparent, with some forgetfulness and confusion, a lowering of temperature (96-97°) and a definite increase in the polyuria—from 6 to 12 liters in the 24 hours. He was brought back to the hospital on *March 21*, as somnolent, expressionless, disoriented, and anamnesic as on his former admission. When aroused he merely mumbled an incoherent reply to questions.

Four days later the gland of another stillborn infant was implanted in the subcortex and intramuscular injections were resumed. In the course of the next ten days he seemed again to reawaken, and largely regained his orientation, though his memory for events, when closely tested, was very defective. There were similar ups and downs for the next week or so, but for the most part he remained in a lethargic state, from which he could not be aroused even by vigorous shaking. There was marked insensitivity to pain—and another striking feature lay in the peculiar, coarse, irregular muscular twitchings, similar to those with which we had become familiar in dogs in a state of experimental cachexia hypophyseopriva.

He died on *April 30*, with a terminal inhalation pneumonia.

The autopsy disclosed a characteristic infundibular cyst about the size of a golf ball, from whose thick wall projected many warty outgrowths of squamous (pharyngeal) epithelium. The brain itself and the meninges appeared perfectly normal. At the seat of the primary implantation was a small cyst the size of a pea, no trace whatever of the implanted gland showing on serial sections. The second implantation was necrotic. The pituitary

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body itself was much distorted from compression and contained no cells with acidophilic granules.

The temptation is great to record at even greater length some of the notes from this individual's voluminous history, particularly those relating to his mental status made on a few occasions by Dr. Meyer, before whose examinations we had labored under the impression that we were dealing with a case of dementia paralytica complicating a retrochiasmal tumor, presumably of hypophysial origin. As it is, however, the essentials have possibly been given, and for our present purposes the matter of chief moment concerns the somnolence, the insensitivity and the psychic deviations associated with the extreme pituitary incompetence.

If our assumption is correct[9] that certain of the secretions of the gland pass directly into the cerebrospinal fluid it is possible that under circumstances such as those recounted an element essential to cortical activity may be lacking from the fluid which bathes the brain. This is, of course, purely hypothetical.

I have ventured elsewhere to liken these somnolent states of hypopituitarism observed under both experimental and clinical conditions and characterized by a subnormal temperature, slow pulse and respiration, storage of fat and so on, to the phenomenon of hibernation; and some clinical examples have been given in the monograph to which I have referred. Moreover, this comparison of hypopituitarism and hibernation is not merely figurative, for the histological examination of the glands in a series of hibernating woodchucks kindly supplied to us by Prof. Sutherland Simpson shows that during the period of seasonal sleep the anterior lobe cells are small, undifferentiated and uniformly free from the granules and varied staining reactions which indicate stages of secretory activity. On this same basis, furthermore, we may justly ascribe the drowsiness which accompanies a variety of intracranial disorders to an hypophysial secretory deficiency rather than to the stimulation of an hypothetical center for sleep, supposed by some to exist in the tuber cinerium.

In the patient whose story has just been related an hypophysial insufficiency was associated with profound psychoses, and allusion

[9] Cushing and Goetsch: Concerning the secretion of the infundibular lobe of the pituitary body and its presence in the cerebrospinal fluid. Amer. Jour. Physiol., 1910, xxvii, 60.

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has been made earlier in this paper to states of insanity accompanying the reverse condition, namely hyperpituitarism. One meets not rarely in the present-day literature of mental disease with the description of disorders classified as dementia præcox, not only in patients with evident acromegaly but also in association with what would seem to be adiposogenital dystrophy. The possibility of some internal secretory derangement as an exciting cause in at least some of the cases now grouped as dementia præcox has, of course, occurred to many, and still fresh in mind are the operations on the thyroid which a few years ago were advocated and practised as a therapeutic measure in certain forms of this multiform disorder.

Dercum and Ellis[10] have recently made a histological examination of the ductless glands in eight cases of dementia præcox, but aside from the fact that all of the patients showed tuberculosis—a finding which they are inclined to connect with some adrenal insufficiency—there were no histological changes of note. Indeed, when it comes to the examination of these structures, especially in the case of a dualistic gland so greatly modified by varying conditions, physiological and pathological, as is the hypophysis, it becomes almost impossible to say what is and what is not a condition of disease. Particularly is this true of glands which have been fixed in divers ways at variable periods after death and then cut haphazard in various directions. This was strikingly brought to my attention a few years ago by the examination of a series of some 75 pituitary glands sent to us from Worcester through the kindness of Dr. Meyer. There appeared to be no examples among them of what might be called histologically normal glands, though certainly many of them must have been normal within physiological limits. Unquestionably we may expect more in the future in so far as the ductless glands are concerned, from the investigation of an individual's pathological serology than is now possible through the microscopical examination of the tissue cells, even with refined methods of staining the secretory granules.

There are two other subjects on which for a moment I shall dwell. One concerns the transmissibility of an internal secretory derangement, the other certain observations concerning the

[10] Dercum and Ellis: An examination of the ductless glands in eight cases of dementia præcox. Jour. Nerv. and Ment. Dis., 1913, xl, 73.

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secondary effect of pituitary and pineal activity upon the sexual sphere—a matter which has some bearing upon the recent Freudian doctrines.

Not only may a parent's physical characteristics, affecting such elements as stature, color and so on, be transmissible, but in families in which an unusually large or small stature seems to be dominant it would appear that pathological deviations toward acromegaly or the reverse are more apt to occur. Examples of this are given in my monograph. There seems to be little doubt too but that pecularities which affect the chemistry of the tissues are equally capable of being inherited, as exemplified by familial diabetes, alkaptonuria, cystinuria and so on.

Some of these conditions are due, in all probability, to inherited disorders of internal secretion, and it is of interest that Halsted observed histological changes in the thyroid glands of the litter of a partially thyroidextomized dog. In the histories of a number of the patients in my hypophysial series diabetes or other evidence of a parental disturbance of tissue metabolism has been recorded, possibly more often in the history of the maternal parent; and even more noteworthy in our present connection is the fact that familial mental derangements are far from uncommon. To be sure, when there is any considerable lowering of hypophysial activity, reproduction becomes impossible owing to the occurrence of amenorrhœa in the female or of impotence in the male. In the early stages of hyperpituitarism, however, there may be a period marked by an especial libido—of which many of the victims of the disease have been aware.

An example of hypopituitarism, associated with a large hypophysial "goitre" occurring in a young man with a family history of insanity, is as follows.

Mr. E., 36 years of age, first came under observation two years ago, with the complaint of impotence and epilepsy.

His father was for a long time in an institution, with the diagnosis of dementia, but was ultimately discharged. He died at the age of 69 of paralysis agitans. An uncle committed suicide in a fit of depression. A cousin is at present in an asylum, with the diagnosis of depressive manic insanity.

He has three brothers, two of whom are twins. They are all stout and have scant hirsuties, as is true of the patient himself. Many of the members of collateral branches of the family are adipose; the grandmother weighs 300 pounds.

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He had an attack of diphtheria at 12 and a severe typhoid at 19 years of age. Soon after his graduation from college he assumed charge of his father's business affairs, which were involved and which entailed considerable responsibility and worry. He married in 1900, and soon afterwards became anaphrodisic and impotent. Epileptiform seizures of an uncinate character with a prolonged gustatory aura have recurred since 1909. These attacks have been associated with a marked confusional state and lapses of memory, often lasting for some days at a time.

The physical examination shows a typical example of hypopituitarism with scant hirsuties, adiposity and physical typus femininus. Weight 220 pounds. The x-ray shows a greatly enlarged sella with absorption of the dorsum. When first observed there were no perimetric or ophthalmoscopic changes, though in the course of the subsequent two years these have become apparent as an increasing pallor of the discs and an homonymous defect for form and colors in the left upper quadrants. A subnormal temperature, dry skin, drowsiness and high sugar tolerance have been noted for some years.

Though the gustatory seizures make it evident that the growth has extended out of the pituitary fossa into the cranial chamber, where it presses against the uncinate gyri, there have been, however, no headaches or other signs of pressure.

A transphenoidal operation was performed on *November 9, 1911*, with partial removal of the intrasellar portion of the large, soft struma. Glandular therapy was instituted, and for some months he appeared in better physical and mental condition. The uncinate seizures, however, have continued unmodified.

All his life the patient has been of rather a gloomy disposition, with recurring fits of despondency, in which he becomes lachrymose on slight provocation. These characteristics have become more pronounced of late. He is very forgetful, drowsy, and often is so depressed that he threatens to make away with himself, believing that he has inherited some mental instability which makes life not worth the struggle. He latterly has ceased to take any interest in his former avocations and amusements, and he has even become uncertain as to the names and uses of the tools in his favorite home workshop.

Another example of transmitted glandular derangement associated with insanity occurred in the case of the acromegalic woman heretofore referred to as suffering supposedly from manic-depressive symptoms, and attention may be drawn to the fact, which the foregoing history also emphasizes, that mental disturbances of a depressive type are particularly characteristic of pituitary disorders.

Her father died in an asylum with some unknown form of insanity. Her mother, who was 43 at the time of the patient's birth, showed definite traces of acromegaly but lived to be 75. The patient herself, one of seven children, most of whom died in early life, had suffered since childhood from what

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she called periods of depression. These she had concealed from others, even from her husband.

As a child she was devotedly attached to and idolized an elder sister, on whom she became so abnormally dependent for action and speech that only with the greatest anguish was she weaned from her when a school separation became necessary. She attended a grammer school, stood well in her studies and graduated at the head of her class.

During this entire time, so far as she can recall, she was secretly unhappy and suffered from a feeling of unreality. She could not look at herself in a mirror, owing to an unnatural sensation, and often considered herself without personality and in a dream. She feared to be alone, for when not actively occupied waves of depression and melancholy would sweep over her. She, however, was too diffident to take part in her classmates' entertainments. She never spoke to anyone of her peculiar feelings.

She taught school the year after her graduation, and did well in spite of her periods of despondency and the recurring sensation of unreality—best described as a feeling that she was automatic and without personality. Her attempts to keep at her work for another year sadly failed owing to periods of depression lasting for some months at a time. It is not clear whether or not these were associated with sexual matters.

In 1898, when 25 years of age, she married a physician, and thinks that the duties and activities of married life, and caring for her household and children, served to lessen her fits of depression for the time-being.

When she was 31, with acromegalic manifestations already apparent, her third daughter was born. This child was overlarge at birth; was exceedingly adipose during the first year of life; first menstruated when two years of age and with regularity since the inaugural period with a single interruption (at *circa* her fifth year) for a few months. At the age of six all her secondary characters of sex had appeared.

When examined at the time of her mother's admission to the hospital she was eight years of age and had the appearance of a child of 14. Though seemingly intelligent she was said to be shy and highly nervous. Her height was 57 inches (normal for her age 48 inches); weight 85 pounds (normal for her age 52.9 pounds).

To return to the mother: not until a few weeks before her admission did her husband, a busy country practitioner, begin to realize her condition through confession of a fit of despondency in which she threatened suicide. When brought to the hospital she was profoundly melancholic, and said among other things: "Life is nothing but insanity or suicide. All my people die on Saturday: there seems to be some fate about it."

She had a large pituitary struma, which was partially removed by a transphenoidal operation. There were no surgical complications and for a time after returning home she appeared better and more cheerful, and was less carefully watched than formerly. Not long after this, on a *Saturday*, she jumped from the second story window of her home and broke her neck in the fall.

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The remarkable sexual precocity exhibited by this unfortunate woman's third child, born after her own acromegaly had become outspoken, brings up the question of *Frühreife* in general and its relation to ductless gland disorders. The close interrelation of hypophysial and gonodal activity has become a matter of general appreciation, and it would appear to be a subject which deserves the close attention of the psycho-analysts of the Freudian school.

The pituitary body and the germinal glands appear to be protagonists. Hypophysial insufficiency and a lowering of the activity of the reproductive functions go hand in hand, and in some of our examples of hypoplasia, glandular feeding has unquestionably led to a restoration of potentio. The reverse is probably also true, for, as stated, a libidinous tendency often accompanies states of secretory hyperplasia, and certain experiments undertaken with Dr. Emil Goetsch have indicated that feeding pituitary extracts to pre-adolescent animals leads to a precocious ovulation and spermatogenesis. These observations, coupled with the knowledge that secretory discharges from the hypophysis may be elicited through the sympathetic nervous system, suggest that the liberation of a chemical messenger may account for the recognized effect of the emotions upon the sexual sphere.

Possibly the most notable instances, however, of *Frühreife* occur in conjunction with pineal lesions, and a number of typical cases have been recognized by others since the appearance of Marburg's and Frankl-Hochwart's papers on the subject. As yet it is not clear whether these extraordinary conditions of precocious adolescence accompanied by a tumor of the pineal gland are due to an excess or to a diminution of the secretory activity of the gland, though the latter would seem to be the more probable not only in view of Foa's suggestive experiments but also for the reason that the gland undergoes early retrogressive changes at or before the occurrence of a normal adolescence.

Two characteristic examples of precocious adolescence associated with a pineal lesion have been under my observation. Both were boys, seven and eight years of age respectively, in one of whom the secondary characters of sex, with marked skeletal overgrowth, had appeared at the age of six, in the other at the age of three years. One of them had a complicating hydrocephalus and had become very adipose, due, I presume, to a secondary effect

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upon the hypophysis, and at the time of the operation for this condition a portion of the testis, removed for histological examination, showed an unusual preponderance of interstitial cells but no spermatogenesis. Both of these uncanny children exhibited extreme mental deviations with lax inhibition, which might easily have led them into punishable acts.

It is plain that the two intracranial glands, hypophysis and epiphysis, normally exercise a remarkable influence not only upon nutrition and skeletal growth but also upon the sexual sphere, and it is not a matter for surprise that in the presence of a definite pathological derangement of either of these structures which dates from childhood, mentality should be so modified as to produce peculiar if not defective individuals when measured by the standard of the average.

With this conception we may find some physiological or pathological basis for what is regarded by many as a psychotherapeutic phantasy; for the various neuroses and asthenias may arise primarily as the result of some disturbance of internal secretion which paves the way for the dreams, symbolisms, neurograms and other acrostichal manifestations dissected by the psycho-analyst. If therefore we are to swallow the Freudian doctrines whole—a difficult morsel for many—and are to interpret hysteria and the psychoneuroses solely as the resultant of early mental conflicts and compromises between the libido and its repressions it will be easily seen that any secretory deviation which on the one hand excites, or on the other diminishes, sexual activities must be an important element in modifying the terms affecting the ultimate compromise.

We have of course been considering extreme examples, but it is quite probable that the psychopathology of everyday life hinges largely upon the effect of ductless gland discharge upon the nervous system. This is particularly worthy of consideration in the study of child psychology in its relation to puberty and adolescence, especially in those individuals in whom there is some underlying, possibly inherited, functional deviation in the chemistry of the internal secretion. At any age, however, in the presence of some ductless gland irregularity psychic shocks, which in, chemically speaking, more stable individuals would be transient, may produce secretory disturbances, characterized by more or less chronicity.

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In psychopathic clinics and in asylums examples of the psychoneuroses associated with possible derangements of internal secretion will doubtless come to be more closely scrutinized, however large or small the group may prove to be, and it is safe to assume that a certain proportion of the feeble-minded or actually insane—the group of cases in which post-mortem examination reveals no apparent cerebral lesion—are at least worthy of investigation from this same standpoint, with possible emphasis on the two intracranial glands. Patients with outspoken physical signs of a pineal disorder, of acromegaly, gigantism or adiposogenital dystrophy, are doubtless comparatively rare among asylum inmates, though many isolated symptoms associated with these states —as adiposity, glycosuria, hypertrichosis, somnolence and so on— are common enough to point out the cases worthy of study, however great may be our present difficulty in determining which was the primary factor—the psychic instability or the disturbance of internal secretion.[11]

[11] It is to be hoped that some serological test, possibly in the direction of Abderhalden's investigations on the serodiagnosis of pregnancy, will serve to give us a chemical reaction of diagnostic value at least for states of overactivity of individual glands. Some glimmerings that these dialyzation tests may be of diagnostic aid in psychiatry are suggested by Fauser's reports (Weitere Untersuchungen auf Grund der Abderhaldenschen Dialysierverfahrens. *Deutsch. med. Wchnschr.*, 1913, xxxix, 304), and we possibly may come to attach an importance to the findings of pathological serology far greater than that which in the past we have given to the cytological changes shown by the microscope.

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PRIMITIVE MECHANISMS OF INDIVIDUAL ADJUSTMENT.*

By STEWART PATON, M. D.,

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Sometimes in attempting to describe the various levels at which human activities express themselves we make use of terms which carry with them the implication that these phenomena occur in separate and distinct planes. The planes or levels are described as if they were superimposed one upon the other, and attention is forcibly directed to fictitious, " specific characteristics," thus placing too great emphasis on contrasts and failing to direct attention to the consideration of processes as functional units.

A number of factors have tended to emphasize a purely artificial division. A decade or more ago the exigencies of the clinic and the practical necessity for carrying out a division between neurology and psychiatry had a most unfortunate effect in emphasizing the antithetical phases in the types of reaction studied by the neurologist and alienist. There were psychologists also who resented the intrusion of the uninitiated into a territory which had been fenced off from the domains of the biologists, and they insisted on the preservation of arbitrary distinctions. A comparatively new and intense interest in the important subject of psychoanalysis has also unfortunately thrown into relief superficial contrasts existing between the different levels of activities without sufficient consideration having been given to the dependence of levels upon each other.

Unless we are extremely careful in studying the responses of the human individual the antitheses or contrasts between the different planes are much more apt to engage attention than are the links by which the various mechanisms are held together, and expressed in the form of individual reactions. We have all been so eager to take apart and examine the different portions of the

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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mechanism that we have entirely forgotten to describe the manner in which the organism as a whole operates.

In attempting to describe the phenomena of response of living organisms in the higher levels of activity we have been forced to employ terms applicable only to the description of simpler mechanisms, and a defective phraseology has served to bring into sharp relief an apparent, but not a real, distinction between the various phenomena. Some of us have also been guilty of selecting terms which were dictated by an unfortunate desire to establish a complete philosophical system.

Not only the old terms need to be revised, but even such a recent and extremely useful addition to our vocabulary as "integration" should be carefully defined. The very fact that such a term is often used to indicate a synthesis of hypothetical psychical elements into single or more complex states may, unless we are on the alert, commit us by mere usage either to a belief in our capacity to recognize and define the mental elements, or will shunt us along lines of investigation which temporarily do not offer the possibilities for extending our knowledge as promising as those to be attained by starting out from another point of departure. Whether the higher levels of activity are capable of being ultimately resolved into the long sought-for elements of sensation does not seem to me at this time to be a matter of any considerable moment in attacking the problems relating to individual behavior. An integration of hypothetical elements can never be experienced by us; and, as practical students of human behavior, interested only in phenomena which fall within the field of experiment, the question may for the present be dismissed. In studying the primitive mechanisms of individual adjustment the responses of the organism to stimulation may be more advantageously treated as units than by attempting to resolve them by means of our present crude methods into elements. We cannot hope to accomplish a complete resolution until we have obtained a far more comprehensive knowledge of the fundamental properties of the living organisms than we yet possess.

Let us not forget that in the study of individual reactions the direction of our thought processes is influenced by a centripetalizing tendency toward a vortex within which "the self" is located; and thus we often tend to place too much emphasis upon those

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phenomena occurring within our own body while neglecting the equally important factor in each reaction of enviroment. This trend in our method of analysis has been responsible to a large degree for the comparison generally adopted of the reactions of an individual to the working of a machine generating its own energy and operating more or less independently of the environment. The comparison with this special type of machine undoubtedly was made in order to supply us with what was supposed to be a complete satisfactory hypothesis to explain the phenomena of response, expressing them in a crude, mechanistic phraseology. If it were not for this unfortunate tendency to seek for ultimate truths the path of the investigator would be an easier one.

If it is necessary to illustrate by analogy our conceptions of the nature of adjustments, we may promptly dispense with the type of machine once employed and substitute for it that of a balance. This change in our angle of vision will give us a new point of advantage in attacking the problems under discussion. Semon has recently indicated the theoretical as well as the practical importance of considering all of the links in the chain of phenomena which are commonly described under the head of irritability. He has defined a stimulus as a change taking place in the entire energetic situation, or, in other words, a disturbance in the balance of forces. As soon as we approach the study of our problems from this standpoint we are enabled to observe the general similarity of nervous reactions with the more fundamental phenomena which may be considered to be general properties of living matter. Although Jennings and other investigators have repeatedly insisted upon the fact that the existence of a nervous system did not predicate the presence of specific functions, in the discussion of these particular problems the truth of this affirmation should be strongly emphasized.

The unit character of reactions is not limited to those determined by the nervous system. If the protein balance in the organism is disturbed by means of an injection of salt solution, Vaughn and other investigators have shown that fever may be the result; or, if the general equilibrium of an individual is disturbed by a blow, a series of reflex or automatic movements may follow. In either case had the balance been maintained there would obviously have been no reaction. In both instances the response of the organism

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may be considered as a unit, and it is not necessary for us in order to establish a causal relationship between stimulus and reaction that we should at once be capable of resolving the underlying phenomena into their elements. As practical students of behavior, that which interests us in both instances is the general character of the results of the experiments.

A general idea of the character of the primitive mechanisms, forming the basis of all individual adjustments, is exemplified by the responses occurring in the early life of the vertebrate embryo. Here one may study to great advantage the first movements, either of heart or body, noting the occurrence of a definite rhythm at a period antedating the appearance of a differentiated nervous system. Rhythmic movements do not in any sense predicate the existence of a special mechanism of adjustment. Of all the influences which modify these primitive movements, heat is undoubtedly one of the most potent factors. The fact should not be overlooked that changes in function following variations in temperature are the result of chemical reactions. The modifications and responses of the organism during the early periods of its life seem to be far more readily induced by a change in temperature than by the introduction even of moderate doses of toxic substances into the surrounding media. This question we have discussed at a greater length in another paper (Proc. Amer. Philosoph. Soc., 1913). At a period when adjustments to temperature have become very delicate, those for mechanical stimuli do not exist. At a still later stage, when the peripheral nervous system is differentiated, a finer discriminating response for chemical stimuli becomes apparent. At this same period cocaine and other drugs of this class first become effective as local anæthetics, but not until the sympathetic nervous system begins to function does the organism acquire the capacity to discriminate between the action of many drugs. (J. Comp. Neurol., Vol. 21, No. 4, 1911.)

It is not my intention to discuss the details of experiments, but simply to refer to a few observations in order to show how impossible it is in analyzing, even the so-called lower levels of activity, to attribute any increase in the complexity of function to the introduction of specific elements. I have already called attention to the importance of exercising caution in the choice of phraseology so as to avoid conveying an impression that barriers exist which

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sharply divide one level of activity from another. The act of taking over the control of primitive adjustments by the nervous system does not introduce any specific elements. As we pass from the study of the primitive adjustments, such as the rhythmical movements of heart or body, to automatic, and even volitional acts, let us remember that the levels at which we pause to study the phenomena are arbitrarily marked out in order to suit our convenience, but do not indicate the existence of actual divisions. When we study very carefully the relation of the first movements of the embryo to the correlative changes in the nervous and muscular systems, although it is possible to observe a certain elaboration of function, we cannot detect any evidence of the creation of new ones. When, for example, the sensory tract in the cord is differentiated a path is opened by which the embryo is brought into more intimate connection with changes taking place in the environment, but we are not able by any present method of analysis to detect the entrance of a new and specific factor into our problem.

For some time I have been impressed with the practical necessity of studying all reactions of the embryo as biological units. Herrick[1] in a very suggestive paper on the cerebral cortex has very clearly formulated the ideas which I had more or less vaguely entertained, but had not been able to express as clearly as he has done. This investigator following Dewey's lead shows the importance of considering unit reactions as a starting point for psychological analysis. If we cannot resolve even the primitive adjustments of the embryo into constitutent elements, then the complexity of the processes expressing the functional activity of the adult cortex will surely baffle all attempts in this direction to state our problems in terms that are intelligible. Herrick has suggested that we should consider the reactions occurring at birth as units, but it seems to me that we may go even further back, beginning with still simpler forms—those taking place during the early life of the embryo, and ones into which fewer factors are introduced that will increase the difficulty of analysis. I have already indicated what seems to me to be the more important factors in these primitive adjustments of the organism: first, those

[1] Herrick, C. Judson: "Some Reflections on the Origin and Significance of the Cerebral Cortex." J. Animal Behavior, May-June, 1913, Vol. 3, No 2, pp. 222-236.

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for heat; then, those for chemical sense which become more defined and are associated with greater discriminating capacity as the peripheral and sympathetic nervous systems develop. These mechanisms play an important rôle in all forms of adaptation. Adjustments in the so-called higher planes of activity always depend upon changes occurring in lower levels; and, as a matter of fact, the former are only possible as long as the latter continue. Adjustments in the will-level always predicate the existence of reflex and automatic activities, for without the occurrence of the latter life cannot exist. Adjustments taking place in isolated planes may be described in books, but never occur in living beings. If a reference to the level at which the hypothetical elements are to be introduced, in order to explain the synthesis of complex mental states, inevitably brings us face to face with formidable theoretical difficulties, may we not avoid a dilemma by a more direct method of investigation of individual reactions?

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DEMENZPROBLEME*

VON PROFESSOR K. HEILBRONNER, UTRECHT, HOLLAND.

In den freundlichen Zeilen, mit denen ich zur Teilnahme an der heutigen imposanten Festlichkeit eingeladen wurde, war mir der Wunsch ausgedrückt, ich möchte als Gegenstand meines Vortrages ein Problem wählen, das einen Einblick in die Weiterentwicklung der *Wernicke'schen* Schule böte. Musste ich mir schon von vornherein zögernd die Frage vorlegen, ob es mir gelingen werde, Gedanken und Worte zu finden, würdig des Tages und der Stelle, da mir zu sprechen vergönnt ist—die Frage, ob es möglich wäre, die *specielle* Aufgabe in auch nur einigermassen befriedigender Weise zu lösen, musste mich noch viel ernstlicher beschäftigen. Der Grund dafür liegt—abgesehen von der Unzulänglichkeit des Einzelnen und der relativen Kürze der Zeit, für die ich Ihre Aufmerksamkeit in Anspruch nehmen darf, in der ganz besonderen Stellung, welche selbst die speziellen Wernickeschen Schüler schon zu Lebzeiten Wernicke's dem Lehrer und seinen Lehren gegenüber eingenommen hatten, und die sich in der Entwicklung seiner Schule nach seinem Tode noch deutlicher widerspiegeln musste. Was *Wernicke* als Neurologe, speciell als Hirnpathologe—übrigens weit über sein speciellstes Forschungsgebiet, das der Aphasie, hinaus—geleistet hatte, hat zum grössten Teil so allgemeine Anerkennung gefunden, dass es schon der heutigen Generation—noch nicht 8 Jahre nach Wernicke's allzufrühem Tode—kaum mehr als Ergebnis seiner Forschung, geschweige denn als ein specieller Besitz der an ihn anschliessenden Schule erscheint, objectiv ja wohl eigentlich der grösste Erfolg und der schönste Lohn, den eine wissenschaftliche Tätigkeit finden kann.

Ganz anders liegen die Verhältnisse bezüglich der in engerem Sinne psychiatrischen Tätigkeit Wernicke's, die uns hier speciell zu beschäftigen hat: dass auf einem Gebiete, das unter so mannigfachen Gesichtspunkten der Durchforschung und Betrachtung zu-

* Vortrag gehalten bei der Eröffungsfeier der "Henry Phipps Psychiatric Clinic" in Johns Hopkins Hospital, Baltimore, Md., 18. April, 1913.

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gänglich ist, nicht eine Betrachtungsweise über alle anderen ohne Weiteres den Sieg davon trug, erscheint verständlich und bedarf keiner weiteren Ausführung; wohl aber mag hier an eine andere Tatsache erinnert werden, auf die ich seinerzeit schon in dem Nachrufe auf Wernicke hinweisen musste, und die in den seitdem verflossenen Jahren noch deutlicher in's Licht getreten ist: auch von den engeren Schülern Wernicke's hatte keiner seine Psychiatrie in toto übernommen; was allen gemeinsam blieb, was auch jetzt noch bei allen sonstigen Verschiedenheiten die Zusammengehörigkeit der "Schule" erkennen lässt, das ist eine gewisse gemeinschaftliche Untersuchungs- und Betrachtungsweise. Es zeugt wohl für die Tiefe und Fruchtbarkeit dieser von Wernicke geschaffenen Betrachtungsweise, dass eine derartige Entwicklung erfolgen konnte, dass eine Wernicke'sche Schule erkennbar weiter bestehen und einen gewissen Einfluss auch über den engen Kreis hinaus entfalten konnte—trotzdem der *praktischen* Psychiatrie aus der Wernicke'schen Richtung zunächst wenig Gewinn zu winken schien und auch sonst ihr *äusserer* Erfolg manche Hoffnungen enttäuschen mochte. Es ergibt sich aus diesem Entwicklungsgang aber für die Wernicke'sche Psychiatrie noch mehr als für jede in Entwicklung begriffene und lebendig fortschreitende Wissenschaft, dass auch von den persönlichen Schülern Wernicke's wohl keiner sich das Recht anmassen dürfte, in jedem Sinne nur Wernicke'sche Ideen bewahrt oder weiter entwickelt zu haben.

Unter diesem Gesichtspunkte möchte ich Sie bitten, auch die nachfolgenden Erörterungen aufzufassen—als die Gedanken eines Psychiaters, der Wernicke zu einer Zeit als persönlicher Schüler und in bescheidenem Masse als Mitarbeiter nahestehen durfte, als der "Grundriss der Psychiatrie" entstand, als er selbst in seinen aufnahmefähigsten Jahren stand, und der zum Mindesten subjectiv die Empfindung und die Absicht hat, im Sinne seines Lehrers weiter zu arbeiten.

Viel weniger Bedenken erregte mir, wenn ich schon dem ehrenvollen Auftrage folgeleisten zu dürfen glaubte, die Wahl eines Themas, das, wie in der Einladung weiter zu lesen war, "im Centrum meines heutigen Interesses stände." Nicht nur heute, sondern eigentlich wohl von Beginn meiner wissenschaftlichen Tätigkeit an, schien mir das Problem der Demenz eines der wichtigsten und bedeutungsvollsten in der ganzen Psychiatrie; es erschien mir als

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Thema der heutigen Besprechung um so geigneter, weil kaum ein anderes durch Wernicke so reiche Anregung und Förderung erfahren hat, wie das der Defectzustände im weitesten Sinne, weil vielleicht an keinem anderen die Wernicke'sche Auffassung psychischer Störungen gleich deutlich und fruchtbar in Erscheinung tritt.

Dass die kurze Spanne eines Festvortrages nicht hinreicht, das Thema auch nur einigermassen erschöpfend zu behandeln, bedarf wohl keiner Betonung; dass die kurze Uebersicht nicht zu vielen abschliessenden Resultaten führen wird, wird niemanden in Erstaunen setzten, der sich auch nur einigermassen der Schwierigkeit der zu lösenden Fragen bewusst ist, und der sich erinnert, welche unendliche Mengen mehr oder weniger wertvoller litterarischer Beiträge zur Lösung der uralten Probleme von psychiatrischer und neuerdings auch von psychologischer und paedagogischer Seite beigebracht wurden.

Gerade in der Stunde der feierlichen Eröffnung einer Anstalt, die mit in erster Linie berufen sein soll, der Wissenschaft und Forschung zu dienen, scheint es mir aber erlaubt, unsere Gedanken nicht vorwiegend nach den gesicherten *Ergebnissen* früherer Tätigkeit zu richten, sondern dahin, wo sich die *Probleme* zu neuer Tätigkeit vor uns auftürmen, und zu untersuchen, wie wir dieselben anzugreifen haben, und uns klar zu werden, wieweit dieselben nach dem heutigen Masse unserer Einsicht und vielleicht für immer als unserm Verständnis unzugänglich und unangreifbar betrachtet werden müssen.

Es kann hier natürlich nicht die Rede davon sein, irgend eine der *practischen* Fragen zu behandeln, die uns die Zustände von Schwachsinn nahelegen: etwa die Behandlung und Erziehung der Schwachsinnigen, die Scheidung der diesbezüglichen Competenzen zwischen Arzt und Paedagogen, die forense Beurteilung des Schwachsinns, die Massregeln gegen gefährliche Schwachsinnige, die Abgrenzung der forens überhaupt zu berücksichtigenden Grade des Schwachsinns; die nachfolgende Darstellung soll sich auf einige rein wissenschaftliche Fragen beschränken.

Dass diese *Scheidung zwischen wissenschaftlicher und practischer Betrachtungsweise* gerade auf diesem Gebiete überhaupt gemacht wird, bedarf vielleicht einer gewissen Entschuldigung: das Endziel wäre natürlich, zu erreichen, dass beide Betrachtungs-

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weisen zusammenfielen, und als Ideal hätte uns ein Zustand vorzuschweben, in dem die Wissenschaft auf jede Frage der Praxis eine Antwort zu geben imstande wäre, und das Mass der Zweckmässigkeit und Brauchbarkeit der getroffenen practischen Massregeln einfach in der Vollkommenheit ihrer Uebereinstimmung mit den Forderungen der Wissenschaft zu erblicken wäre. Die Praxis wird aber mit ihren Massregeln nicht warten können, bis die Wissenschaft alle für einen solchen Idealzustand nötigen Grundlagen geschaffen hat, gleichviel ob sie als individuelle Therapie von dem Hilfsbedürfnis der Erkrankten oder ihrer Angehörigen zum Eingreifen gedrängt wird, oder ob die öffentliche Ordnung von ihr allgemeine sociale Massregeln verlangt; sie wird eventuell genötigt sein, Compromisse zu acceptieren; sie wird unter Umständen selbst ein vorsichtiges Probieren nicht vermeiden können, während anderseits allerdings von ihr nicht verlangt werden sollte, dass sie *jede* neu auftretende, noch unbewiesene wissenschaftliche Lehre oder Hypothese unmittelbar zum Ausgangspunkte praktischer Massnahmen in grossem Style mache. Die wissenschaftliche Auffassung *darf* dagegen keine Compromisse kennen; sie wird widersprechende Ansichten nicht im Wege des Compromisses vereinigen, sondern durch Nachprüfung und Kritik so lange gegeneinander abzuwägen haben, bis die eine die andere ganz oder teilweise überwunden hat; sie wird aber vor allem ihr Hauptaugenmerk nicht auf die erreichten Resultate zu richten haben, die sie der Praxis überlässt, um sie zu Gunsten der Allgemeinheit nutzbar zu machen: sie wird vielmehr das Erreichte nur als die Grundlage betrachten, von der aus sie neue Probleme oder alte Probleme mit neuen Mitteln in Angriff nimmt; man wird dieser verschiedenen Stellung von Wissenschaft und Praxis zu den Resultaten einerseits, zu den Problemen anderseits eingedenk bleiben müssen, um vor der Entmutigung bewahrt zu bleiben, zu der das Auftauchen immer neuer Probleme in der wissenschaftlichen Betrachtung sonst wohl führen könnte.

Dass auch die Beschäftigung mit dem Probleme der Demenz nicht ergebnislos gewesen ist, soll hier nicht näher ausgeführt werden; wir beschäftigen uns nur mit einigen Fragen, die noch der Lösung harren.

Allgemeine Uebereinstimmung besteht darüber, dass als die *Voraussetzung* für die Diagnose eines Demenz- Blödsinns- oder

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Verblödungszustandes das Vorliegen einer psychischen *Minderleistung* anzusehen ist; über die Natur dieser Minderleistung wird alsbald zu sprechen sein; controvers aber ist seit sehr langer Zeit die Frage, ob als weitere Voraussetzung postuliert werden darf und soll, dass diese Minderleistung eine *dauernde und irreparable* sein müsse: unverkennbar besteht neuerdings eine zunehmende Neigung, die Frage zu bejahen; man wird dabei die classificatorische resp. terminologische Frage strenge von der symptomatologischen zu trennen haben.

Es ist zweifellos berechtigt und entspricht einem Bedürfnis der Klinik, die stationären irreparablen Zustände von Minderleistung zu trennen von den vorübergehenden und reparablen; es ist ebenso zweifellos eine der Aufgaben der klinischen Psychiatrie für jeden Einzelfall nachgewiesener Minderleistung Anhaltspunkte für die Entscheidung zu finden, ob diese Minderleistung der gänzlichen oder teilweisen Restitution zugänglich sein wird; es ist auch durchaus unbedenklich und praktisch vielleicht sogar empfehlenswert, wenn man sich dahin einigt, die *Bezeichnung* Demenz für diejenigen Zustände zu reservieren, in denen ein der Restitution nicht mehr zugänglicher Zustand der Minderleistung sich entwickelt hat. Damit ist aber der Entscheidung der andern Frage nicht vorgegriffen, ob zwischen temporären und stationären Ausfallserscheinungen ein *principieller* Unterschied etwa in dem Sinne besteht, dass die ersteren niemals in letztere übergehen könnten, dass jede Minderleistung unter allen Umständen von vornherein als restituierbar oder nicht restituierbar auftreten und eventuell auch zu erkennen sein müsste. Wir kennen allerdings Beispiele für beide Categorien: tausendfältige Erfahrung hat uns gelehrt, dass die Minderleistungen, zu denen die gewöhnliche melancholische Depression führt, niemals stationär werden; die Ueberzeugung, dass das gleiche auch für die Ausfallserscheinungen zutrifft, welche die klimakterischen Depressions- und Angstzustände mit sich bringen, wird im Gegensatz zu einer vor noch nicht allzu langer Zeit vertretenen Auffassung immer allgemeiner, und diese Ueberzeugung drückt sich darin aus, dass man die betreffenden Kranken nicht als dement bezeichnet und einen Uebergang in Demenz als nicht essentiell zum Verlaufe dieser Psychosen gehörig bezeichnet; wir kennen auch eine Reihe von Zuständen, in denen wir uns erfahrungsgemäss für berechtigt halten dürfen, nachweisbare Ausfalls-

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erscheinungen als definitive und nicht mehr restituierbare anzusehen, wenn wir auch auf Grund von Erfahrungen, wie wir sie gerade bei den protrahierten klimakterischen Depressionszuständen gemacht haben, mit dieser Annahme immer vorsichtiger zu werden gelernt haben. Derartige Erfahrungen berechtigen aber immer noch nicht zu der Annahme eines grundsätzlichen Unterschieds zwischen temporären und dauernden Ausfallserscheinungen für *alle* Fälle; sie schliessen nicht aus, dass derselbe Vorgang, um einen möglichst wenig praejudicierenden Ausdruck zu gebrauchen, der einmal einen restituierbaren Ausfall verursacht hat, eventuell später bei demselben Individuum zu einer Dauerschädigung führen kann. Die Frage darf natürlich nicht mit der andern zusammen geworfen werden, ob etwa nach einem acuten Krankheitsprocess und nach dem Schwinden acuter Erscheinungen ein stationärer eventuell sogar progredienter Defectzustand verbleiben kann. Man wird für viele dieser Fälle mit Recht annehmen dürfen, dass die Vorgänge, die den acuten Erscheinungen zu Grunde lagen, *neben* denen einhergingen, die Ursache des Defectes sind, und dass die letzteren auch nach "Ausheilung" der acuten Vorgänge stationär oder sich weiter entwickelnd ihre Wirkung entfalten. Die Berechtigung und Notwendigkeit *dieser* Scheidung erhellt am einwandfreiesten aus der Betrachtung der Paralyse; mit vollem Recht hat neuerdings *Schröder* wieder einmal auf die viel zu oft übersehene Erfahrung hingewiesen, dass sich ein—auch für praktische Fragen bedeutsames—genügendes Verständnis der Remissionen der Paralytiker nur gewinnen lässt, wenn man zwischen den zunächst restituierbaren im engeren Sinne psychotischen Erscheinungen und den vielfach besserungsunfähigen und auch von den Remissionen unbeeinflussten Ausfallserscheinungen principiell scheidet.

Hier beschäftigt uns eine andere Frage: können *dieselben* Erscheinungen, die wir bei einem Patienten zuletzt als Teilerscheinungen eines definitiven Defectzustande constatiert haben, eventuell vorher schon als transitorische, restituierbare Ausfälle nachweislich gewesen sein; trifft das zu, dann glaube ich, wird auch der Schluss gezogen werden dürfen, dass auch der gleiche *Vorgang* unter wechselnden Verhältnissen (in Betracht käme eventuell die Intensität oder die Dauer desselben)—einmal transitorische, ein andermal definitive Ausfälle herbeiführen kann; ich glaube, dass

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die klinische Erfahrung im Sinne dieser Annahme spricht. Ich könnte an die presbyophrenen Zustände erinnern, die wir beim gleichen Individuum etwa im Anschluss an eine Infektionskrankheit oder eine akute vasculäre Schädigung des Gehirns oder, was weniger bekannt zu sein scheint, an eine allgemeine Circulationsstörung auftreten sehen, um sich zunächst wieder total zu restituieren, die dann bei Wiederholung der gleichen Schädigung jeweils recidivieren, um mit jedem folgenden Male sich weniger gut zurückzubilden, bis zuletzt ein sich *nicht* mehr restituierender Defect verbleibt, der, soweit es die hier ausschliesslich interessierenden Ausfallserscheinungen betrifft, in jeder Hinsicht dem ersten und zunächst genesenen entspricht; ich möchte mich aber nicht an dieses Beispiel halten, da gerade die Qualification dieser presbyophrenen Zustände als Demenz von *Wernicke* selbst, der den Zustand als erster charakterisierte und den Namen schuf, bestritten wurde; ich gehe aus demselben Grunde auf die symptomatologisch zum grossen Teil identischen anderweitigen Zustände mit der Symptomatologie der Korsakow'schen Psychose nicht ein, trotzdem der Verlauf all' dieser Zustände—am einwandfreiesten wohl bei den alkoholischen Formen, die begreiflicherweise am meisten zu Recidiven neigen,—die obige Bedingung erfüllt: Auftreten von Ausfallserscheinungen, die zunächst wieder schwinden, mit jedem Recidiv aber wieder auftreten und mit jedem folgenden Male unvollständiger sich restituieren. Ich möchte hier vielmehr an einen Krankheitsprocess erinneren, über dessen Ausgang in Demenz wohl allgemeine Uebereinstimmung herrscht: die Epilepsie. Es ist wohl schon länger bekannt, dass mit der zunehmenden Dauer der Erkrankung und dem fortschreitenden Verfall der Kranken die Grenzen der acut psychotischen Phasen gegen den Habitualzustand sich immer mehr verwischen, so dass man bei sehr schweren terminalen Epilepsien nicht einmal mehr den Anfang, geschweige denn das Ende der acuten Zustände deutlich praecisieren kann. Diese Erscheinung ist nicht ausschliesslich darauf zurückzuführen, dass gewissermassen die Niveaudifferenz der Curve, in der sich der *Gesammtverlauf* der Psychose darstellen lässt, geringer wird, wenn sie sich nicht mehr vom " Nullpunkte " der Norm an erhebt: man kann vielmehr individuell nachweisen, wie Einzelsymptome aus den acuten Zuständen in jeweils stärkerem Masse nach jeder Attacke in das nachfolgende Intervall mit hinüber genommen

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werden. Ich habe auf einschlägige Beobachtungen schon vor längerer Zeit anlässlich der Besprechung der Sprachstörungen der Epileptiker hingewiesen; lange fortgesetzte Untersuchungen in meiner Klinik, über die *Polet* berichtet hat, haben dasselbe für zahlreiche andere Symptome erweisen können und zwar nicht nur für solche Symptome, die gewissermassen activ, wie gewisse Wahnbildungen, residuär weiter bestehen, sondern auch für Ausfallssymptome, die zunächst nur andeutungsweise und zuletzt doch noch sich restituierend später deutlich und irreparabel die acuten Psychosen überdauern, so dass also tatsächlich der epileptische Dauerzustand bis zu einem gewissen Grade als eine Summe der Residuen der aufeinander folgen acuten Zustände—auch in Bezug auf die Ausfallsercheinungen—aufgefasst werden kann. Diese Auffassung und Betrachtungsweise wird dem Verständnis näher gerückt, wenn man sich einigermassen ähnlicher Vorgänge auf somatischem Gebiete erinnert; die typischsten Analoga bietet hier die progressive Paralyse, in erster Linie jene nicht gerade seltenen Formen, die zuletzt zum Bilde der spastischen Paraparese mit schwerster Sprachstörung, combiniert mit anderen Erscheinungen vom Charakter der Pseudobulbärparalyse geführt haben; in der übergrossen Mehrzahl dieser Fälle sind anamnestisch zahlreiche paralytische Anfälle—mit oder ohne Reizerscheinungen—zu eruieren, und die Entwicklung erfolgt dann in der Weise, dass jeweils nach dem Anfall schwere Lähmungserscheinungen zu constatieren sind, die nach dem ersten bis auf geringe Reste und nach jedem folgenden immer weniger vollständig wieder zurück gehen, bis zuletzt auch hier die Summe der Residuen einen schweren Ausfall darstellt.

Es wird später darauf zurückzukommen sein, zu welchen Schwierigkeiten bezüglich der anatomischen Begründung der Demenz diese zunächst *rein* klinchen Erfahrungen Anlass geben können; zunächst sei nur ganz kurz darauf hingewiesen, wie gerade diese auffallende Analogie in der Entwicklung der Demenz und gewisser rein körperlicher Störungen besonders geeignet ist, die besondere Stellung der Demenz auf der Grenze zwischen den in engerem Sinne psychotischen Symptomen und den reinen Herdsymptomen zu illustrieren, eine besondere Stellung, die uns immer wieder die Hoffnung wecken muss, wenn überhaupt auf dem

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Umwege über die Kenntnis der Demenz den Zugang zu einer hirnpathologischen Auffassung der Psychosen zu finden.

Noch viel schwieriger erscheint es zur Zeit, eine auch nur einigermassen befriedigende Antwort auf die Frage zu finden, welcher *Art* oder *welchen Umfanges* die eingangs erwähnte psychische Minderleistung sein muss, um den Befallenen im Sinne der Wissenschaft dement erscheinen zu lassen; hier machen sich neben Definitionsfragen vor Allem auch Differenzen in der Gesammtauffassung alles psychischen Geschehens geltend. Es soll im Folgenden versucht werden, all' derartige Fragen nach Möglichkeit auszuschliessen und die Erörterung auf einem Boden zu führen, auf dem sich auch Vertreter entgegenstehender principieller Auffassungen zusammenfinden können.

Die Frage lässt sich auch einigermassen anders formulieren: dahin, ob man überhaupt berechtigt ist, von *der* Demenz in dem Sinne zu sprechen, dass darunter ein in allen einschlägigen Fällen identischer, nur quantitativ von einem Falle zum andern oder bei demselben Falle von Zeitpunkt zu Zeitpunkt differierender Zustand zu verstehen wäre. Jedes elementare Lehrbuch der Psychiatrie scheint die Antwort auf diese Frage und zwar in verneinendem Sinne zu enthalten: Wir kennen eine paralytische, senile, arteriosclerotische, hebephrene, epileptische Demenz. Thatsächlich aber diagnosticieren wir nicht diese speciellen Demenzen, sondern wir diagnosticieren die Erkrankung Paralyse, das Senium, die Arteriosclerose, die Hebephrenie, die Epilepsie und wir legen der bei diesen Erkrankungen gefundenen Demenz den Namen der Grundkrankheit bei. Die Diagnose der Grundkrankheit aber erfolgt an sich auf Grund von Symptomen, die zum allergrössten Teil mit der Demenz keinerlei symptomatologische Beziehungen haben, zum Teile (Paralyse, Arteriosclerose, Epilepsie) rein körperlicher Art sind und, auch soweit sie psychisch sind (Hebephrenie) *an sich* nicht einmal den allgemeinen Character der Ausfallserscheinungen zu tragen brauchen.

Die Frage der specifischen Demenzen bliebe demnach noch offen; theoretisch wären zwei Möglichkeiten gegeben: nach Abzug all' der eben als diagnostische Hilfsmittel genannten Erscheinungen könnte ein Defectzustand übrig bleiben, der in *allen* Fällen identisch den Zustand der (dann einheitlichen) Demenz darstellte, oder es könnten wieder nach diesem Abzug in den verschiedenen

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Fällen Ausfallscombinationen verschiedener Zusammenstellung übrig bleiben; daraus müsste unabweisbar der Schluss gezogen werden, dass statt *einer* Demenz thatsächlich mehrere essentiell verschiedene Formen der Demenz bestehen, gleichviel ob diese verschiedenen Formen jeweils in typischer Ausbildung gerade den uns zur Zeit bekannten Krankheitsformen zugeordnet sind, und vor Allem, ob wir heute schon imstande sind, *rein* auf Grund dieses postulierten specifischen, reinen Defectzustandes etwa die Diagnose der Grundkrankheit ohne die erwähnten Hilfsmittel zu stellen.

Es ist unschwer einzusehen, dass, was hier bezüglich der Demenz ausgeführt wurde, in gleicher Weise—allerdings gewissermassen mit positivem statt negativem Vorzeichen—auch für die Intelligenz Geltung beanspruchen kann, und es kann vielleicht der weiteren Erörterung zu Gute kommen, wenn man sich zunächst über die einschlägigen Verhältnisse klar zu werden versucht; auch bezüglich der Intelligenz ist die Frage erhoben und untersucht, ob sie eine einheitliche Erscheinung darstellt, von der eine Reihe speciellerer abhängig sind, oder eine Summe verschiedener, jeweils in wechselnder Weise zusammengesetzter Componenten. Auf Grund experimenteller Untersuchungen hat man bekanntlich die erstere Auffassung als die richtigere annehmen zu dürfen geglaubt. Die hohe Correlation, die *Krueger* und *Spearman* zwischen einer Reihe relativ einfacher psychischer Leistungen feststellen konnten, führten sie zu der Annahme, dass zum wenigsten diese Leistungen (zu denen bemerkenswerter Weise das Auswendiglernen nicht gehörte) von der Wirkung eines bestimmten "Centralfactors" abhängig seien. Bei aller Anerkennung der Bedeutung solcher Untersuchungen wird man aber einen von den Autoren selbst hervorgehobenen Gesichtspunkt nicht ausser Acht lassen dürfen: dass die von ihnen geprüften Leistungen der "eigentlichen Intelligenz" im höheren Sinne noch recht ferne stehen. Der "Eindruck," dass die Intelligenz im engeren Sinne etwas von Fall zu Fall verschiedenes darstelle, ein Eindruck, den die unvoreingenommene tägliche Beobachtung zu machen geeignet ist, könnte daneben also sehr wohl zu Recht bestehen; ja man kann bezweifeln, ob es jemals gelingen wird, diese Intelligenz im höheren Sinne, die eben etwas individuelles, schwer vergleichbares und noch schwerer messbares darstellt, überhaupt einer exacten Untersuchung mit

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zahlenmässig und tabellarisch festzustellenden Resultaten zugänglich zu machen.

Unter den hier skizzierten Gesichtspunkten verdient nun vor Allem das Verhältnis der Intelligenz*prüfung* zur Demenz*prüfung* betrachtet zu werden. Die Meinung scheint fast allgemein verbreitet, dass dieselben Methoden, *i. e.*, die qualitativ *und* quantitativ gleichen Aufgaben sowohl für die Intelligenz-, wie für die Demenzprüfung geignet wären, ja dass beide Prüfungen eigentlich zusammenfielen; diese Auffassung läge besonders nahe, wenn man annimmt, dass sich alle Grade von der tiefsten Demenz an bis zur höchsten Intelligenz in eine einfache Reihe ordnen liessen; unter diesem Gesichtspunkte wird dann auch ein Vorwurf verständlich, den neuerdings *Stern*, allerdings von einem sehr engbegrenzten Begriff der Intelligenz ausgehend, der Methodik der Psychiatrie gemacht hat: dass sie nämlich den Begriff der Intelligenz viel zu weit gefasst habe und darunter Eigenschaften begreife, die mit der " eigentlichen Intelligenz " nichts zu tun hätten. Ganz abgesehen davon, ob sich zur Zeit eine derartige eigentliche Intelligenz überhaupt oder speciell nach der von *Stern* vorgeschlagenen Formel abgrenzen lässt, glaube ich, dass dabei der grundsätzliche Unterschied zwischen der Arbeitsweise und der Fragestellung des Psychologen und des Psychiaters übersehen wird: der erstere sucht nach Methoden der Intelligenzprüfung, der letztere sucht Demenzzustände festzustellen: das bedingt nicht nur selbstverständliche quantitative Differenzen, insofern etwa die verfügbaren Minimalaufgaben zur Schwachsinnsprüfung noch viel geringere Anforderungen zu stellen haben werden, als die einfachsten im Intelligenzprüfungsschema, sondern auch weitergehende: man wird annehmen dürfen, dass es tatsächlich Fähigkeiten gibt, deren *Erhaltensein* oder selbst höchste Entwicklung die Untersuchten noch nicht als intelligent erscheinen lassen wird, und die doch nicht *ausfallen* können, ohne das Individuum defect zu machen. Es genüge, an die Merkfähigkeit zu erinnern, die bekanntlich selbst bei Idioten gelegentlich einmal sogar extrem ausgebildet sein kann, ohne dass doch gleichwohl die sonstigen Demenzsymptome auch nur im Mindesten compensiert würden, deren Wegfall aber gleichwohl das betroffene Individuum dement in dem unten zu umschreibenden Sinne erscheinen lassen muss.

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Selbst angenommen also, dass tatsächlich *die* Intelligenz etwas einheitliches darstellt und dass es dann—eine selbstverständliche Consequenz dieser Auffassung—möglich wäre, als Gradmesser dieser Intelligenz eine oder einige wenige Prüfungsaufgaben zu finden, deren Resultate in hoher Correlation zu den andern stehend uns der Mühe der Prüfung oder Schätzung aller Einzelfunctionen entheben würden, wie es ja das Endziel der verschiedenen Testmethoden ist: für die Demenzprüfung werden wir immer noch eine Reihe specieller Aufgaben zur Verfügung haben müssen, die auch diejenigen Ausfälle zu constatieren gestattet, welche von den Intelligenzprüfung nicht erfasst werden und nach dem Obigen eben nicht erfasst werden *können,* ja nicht einmal erfasst zu werden brauchen.

Aus diesen Ueberlegungen ergibt sich aber auch, dass die Wahrscheinlichkeit, zu einer einheitlichen Auffassung für die Demenz als solche zu kommen noch geringer ist als für die Intelligenz—man müsste denn annehmen dürfen, dass *alle* diejenigen Leistungen, die der Intelligenz angehören, inclusive derjenigen weiteren, die bei der Demenz geschädigt sind, zusammen von irgend einem Centralfactor höherer Ordnung abhingen.

Was sich bisher hat feststellen lassen, spricht keineswegs in diesem Sinne; allerdings haben *Foerster* und *Gregor,* die im Anschluss an die Normaluntersuchungen von *Krüger* und *Spearman* Untersuchungen bei progressiver Paralyse ausgeführt haben, feststellen können, dass auch beim Paralytiker zwischen den Vorgängen, die beim Normalen in Correlation stehen, sich Zusammenhänge nachweisen lassen (soweit deren Prüfung beim Paralytiker überhaupt möglich ist!) und dass diese in Correlation stehenden Functionen durch den der Krankheit zugrunde liegenden Process in annähernd gleichem Grade geschädigt werden; sie haben aber auch das grundsätzlich noch viel wichtigere Resultat erhoben, dass eine ausserhalb dieser Correlation stehende Leistung, die Lernfähigkeit, nicht nur generell in abweichendem Grade geschädigt wird, sondern auch individuell beim Paralytiker in sehr wechselnder Weise gelitten haben kann, bald mehr bald weniger als die eben erwähnten Functionen geschädigt erscheint.

Wenn dies schon innerhalb einer, noch dazu auch durch die anatomische Untersuchung als einheitlich erwiesenen Erkrankungsform von Individuum zu Individuum geschehen kann, dann

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würde man von vornherein zu erwarten haben, dass bei verschiedenen Processen a potiori solche Differenzen auftreten werden. Der Nachweis dieser Differenzen, noch mehr die Herausschälung von Differenzen, die für die verschiedenen Erkrankungen als *typisch* zu erachten wären, ist allerdings schwieriger, als den einfachen oben umschriebenen Voraussetzungen zu entsprechen scheint: es ist oben davon ausgegangen, dass die Demenz nur den reinen Defectzustand darstellen soll, dass also alles, was nicht einfach als Ausfallssymptom zu erachten ist, für die Symptomatologie der Demenz *i. e.*, S, also auch für die Differentialdiagnose der verschiedenen Demenzformen *nicht* in Betracht kommen soll, auch wenn diese weiteren Symptome für die Diagnose der Grundkrankheit von grosser, eventuell sogar ausschlaggebender Bedeutung sein mögen.

Die genannten Schwierigkeiten sind zum Teil mehr äusserlicher Art; zahlreiche im engeren Sinne psychotische Störungen—Affecte, wahnhafte Auffassung der Untersuchung—können eine eigentliche Defectprüfung unmöglich machen; viel grösser ist die andere Schwierigkeit: zu entscheiden, wie die theoretisch so einfache Trennung zwischen Defecterscheinungen und psychotischen im engeren Sinne factisch zur treffen ist. Das typischste Beispiel für diese Schwierigkeit ist wohl der lange Zeit geradezu mit Erbitterung geführte, jetzt zwar nicht entschiedene, aber doch einigermassen zur Ruhe gekommene Streit über die Demenz der Paranoiker: ob, wie die einen meinten, die Uncorrigierbarkeit auch der *uns* ganz absurd erscheinenden Wahnideen aus dem Wesen der Wahnideen selbst sich ergebe, oder ob die Erscheinung eine daneben bestehende Demenz zur Voraussetzung habe und damit implicite als Beweis einer solchen erachtet werden dürfe. Es will mir scheinen, dass derartige Fragen der Lösung überhaupt nicht zugänglich sind, solange man sich an den Begriff einer einheitlichen Demenz klammert, weil sie nicht durch Beibringung und kritische Verwertung neuen Materials zu lösen sind, sondern stets je nach der subjectiven Auffassung vom Wesen der Demenz, wovon der einzelne Beurteiler ausgeht, verschieden beantwortet werden. Unter demselben Gesichtspunkte könnte man auch eine andere Frage aufwerfen, die zunächst sehr überraschend und revolutionär klingen mag: ob man eigentlich selbst in den Endzuständen der Dementia praecox von einer

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Demenz in dem oben umschriebenen Sinne, von einer einfachen Minderleistung, sprechen darf. Es ist immer wieder darauf hingewiesen worden und ausgedehnte Untersuchungen, die *Penon* neuerdings an den uns zur Verfügung stehenden langjährigen Anstaltsinsassen gemacht hat, haben dafür wieder schlagende Beispiele geliefert, wie gering bei diesen Zuständen eigentlich der wirkliche Defect ist, wie die Kranken nicht nur sehr viel wissen, sondern tatsächlich auch bei der Demenzprüfung viel *leisten*, wenn die Umstände günstig sind, das heisst, wenn diejenigen Momente sich ***nicht*** störend gelten machen, die vielfach die Prüfung unmöglich machen oder den *Schein* des schweren Ausfalls hervorrufen. Es ist ebenso bekannt, wie sehr der Einfluss dieser Momente schwankt, von Minute zu Minute, auch abhängig von äussern Einflüssen, Person des Untersuchers u. ä. Es kann darum auch nicht die Rede davon sein, dass es sich dabei etwa um zunächst jeweils restituierbare Ausfälle handle, wie sie eingangs erwähnt wurden; dem widerspräche ausser diesen schrullenhaften Schwankungen gerade die Erfahrung, dass es auch in den Terminalstadien eben ***nicht*** zum definitiven Ausfall kommt. Die Auffassung lässt sich zum Mindesten nicht von vornherein von der Hand weisen, dass der Eindruck der Verblödung nicht durch einen *Ausfall* in dem mehrfach unschriebenen Sinne, sondern durch andere Momente bedingt ist, die gleichviel wie man sie auffasst und benennt (Motilitätssymptome, Sperrung, Negativismus), den sonstigen echt psychotischen näher stehen als den Defecterscheinungen und die ihren gewissermassen irritativen Charakter im Gegensatz zu den reinen Ausfallserscheinungen gerade in dieser Tendenz zu plötzlichen Schwankungen dokumentieren.

Aber auch wenn man von all' diesen strittigen Categorien absieht, wenn man sich weiterhin auf diejenigen Zustände beschränkt, bei denen tatsächlich auch die Prüfung des reinen Defectes möglich ist, auch dann noch scheint mir die Folgerung unabweislich, dass dieser ***reine*** Defect nicht einheitlich ist, dass vielmehr die Componenten desselben sicher von Krankheitsgruppe zu Krankheitsgruppe, und wahrscheinlich ebenso wie es oben für die Paralyse angeführt wurde, auch für andere Gruppen von Fall zu Fall variieren. Die reine paralytische Demenz stellt—aller sonstigen charakteristischen und für die Diagnose zur Zeit noch ausschlaggebenden Momente entkleidet—etwas anderes dar als etwa die

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epileptische Verblödung; jene ganz eigenartige Störung der combinatorischen Fähigkeit, die man in den acuten epileptischen Zuständen auftreten und in die Defectzustände hinein persistieren sieht, ist der paralytischen Demenz im Allgemeinen fremd; (die typischste Illustration dafür liefert die vergleichende Prüfung mit den von mir eingeführten Serienbildern); die *schwere* Störung der Merkfähigkeit, die man bei den jetzt wohl allgemein als Demenzformen aufgefassten presbyophrenen Zuständen auftreten sieht, werden bei der Epilepsie überhaupt nicht und bei der Paralyse vielfach erst in denjenigen Stadien erreicht, in denen das psychische Leben überhaupt dem Erlöschen nahe ist; wieder andere Züge scheinen die jugendlichen Schwachsinnsformen darzubieten; dass sie nicht etwa nur durch das eine gemeinsame Merkmal von anderen Schwachsinnszuständen verschieden sind, dass sie in der Entwicklungsperiode sich geltend gemacht resp. die geistige Entwicklung aufgehalten haben, lässt sich schon daraus ableiten, dass auch der Defect bei verschiedenen Idioten oder Imbecillen abgesehen von den quantitativen Differenzen, schon für die grobe klinische Betrachtung sich auch als qualitativ verschieden resp. aus verschiedenen Componenten zusammengesetzt zeigt; als typischste Beispiele dafür seien die Idioten mit einseitigen Begabungen in Erinnerung gerufen.

Man kann gleichwohl gegen diese ganze Auffassung Bedenken geltend machen, zunächst ein mehr theoretisches, um nicht zu sagen doctrinäres: dass nämlich diese Auffassung, indem sie die Demenz als Summe aus einer Reihe wechselnder Componenten betrachte, auf die Einheitlichkeit alles geistigen Geschehens nicht genügend Rücksicht nehme. Es will mir scheinen, dass dieser Einwand ohne Weiteres hinfällig wird, wenn man sich darüber klar wird, dass diese "Einheit" selbstverständlich gestört werden *muss*, gleichviel welche Teile ausfallen oder ungenügend functionieren, und dass also eine Beeinträchtigung dieser Einheit stets die Folge sein wird, gleichviel ob man den Defect in allen Fällen denselben oder von Fall zu Fall resp. Krankheitsgruppe zu Krankheitsgruppe wechselnd sein lässt.

Viel ernster und tatsächlich erwägenswerter erscheint ein anderer Einwand: es musste oben schon darauf hingewiesen werden, dass diejenigen Untersuchungsmethoden, die uns ein *einigermassen* exactes Arbeiten und die Gewinnung vergleichbarer Resultate

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gestatten, der " eigentlichen " Intelligenz gegenüber sich noch als unzureichend erwiesen haben und vielleicht immer erweisen werden. Man kann die Frage erheben, ob denn die *Methoden*, mittels deren wir die Demenz prüfen und vergleichen, trotz der relativ günstigeren Bedingungen nicht gleichfalls das eigentlich Essentielle der Demenz verfehlen, oder ob, positiv ausgedrückt, diejenigen Ausfälle die wir mit diesen Methoden feststellen, tatsächlich das *Wesen* der Demenz ausmachen.

Die Frage liegt um so nährer, wenn man sich einer Beobachtung erinnert, die uns gerade bei der oben erwähnten Untersuchung alter Anstaltsinsassen durch *Penon* ganz besonders deutlich geworden ist, dass sich nämlich unter Umständen einmal bei einem alten Circulären ein *Dauer*zustand entwickeln kann, in dem die verschiedenen Prüfungsaufgaben viel schlechtere Resultate ergeben, als man sie häufig bei Dementia praecox zu erhalten pflegt, *ohne* dass der Betroffene gleichwohl auch nur entfernt in demselben Masse dement erscheint; die Momente, von denen es abhängt, warum uns ein Kranker, bei dem die Demenz*prüfungs*methoden ein viel schlechteres Resultat ergeben haben, doch weniger dement erscheinen kann als ein anderer, der bei dieser Prüfung viel besser bestanden hat, (ein Widerspruch, der sich wieder nicht nur von einer Psychose zur anderen, sondern auch z. B. beim Vergleich verschiedener Paralytiker untereinander aufdrängen kann), entziehen sich tatsächlich einer exacten Formulierung, geschweige denn Untersuchung; wenn jemand behaupten würde, dass auch die Funktionen, die wir jetzt bei der Demenzprüfung untersuchen, noch nicht die wesentlichen sind, dass ihre Störungen *nicht* das eigentliche Wesen der Demenz ausmachen, dass sie ebenso als *nicht* essentielle Erscheinungen neben der eigentlichen Demenz einhergehen, und bei durchdringender Betrachtung von dieser gesondert werden müssen, wie es oben für die *i. e.* S. psychotischen Componenten verlangt wurde: ich glaube, er wäre kaum mit beweisenden Gründen zu widerlegen, und es wäre ihm höchstens einzuwenden, dass auch diese " eigentliche Demenz " nichts einheitliches darzustellen scheint, dass die Veränderung der Gesammtpersönlichkeit, oder was man sonst als Ausdruck oder Criterium der Demenz an sich betrachten will, eben wieder etwa beim Epileptiker anders sich darstellt als beim Paralytiker. Man käme wieder zu der Frage: sind vielleicht auch diese Differenzen wieder nur unwesentliche Corollarsymptome der wirklichen centralen Störung?

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und man würde sich zuletzt in nutzlose und uferlose Erwägungen und Discussionen verlieren können, nicht darüber, was die Demenz ist, sondern was darunter verstanden werden soll.

Die klinische Psychiatrie kann auf diesem Wege keine Fortschritte erwarten, und sie würde selbst in der Voraussetzung, dass die aufgeworfenen Fragen wirklich später einmal der Lösung näher zu bringen wären, zur Zeit Mangels jeder entsprechenden Methodik eben darauf verzichten müssen, sie in Angriff zu nehmen, bis ihr entweder der eigene Fortschritt oder der Fortschritt der Nachbarwissenschaften, vor Allem der Psychologie, die nötigen Waffen geliefert hat; sie wird sich, und auf diesem Gebiete werden sicher noch Erfolge zu erzielen sein, darauf beschränken müssen, zunächst das Studium der uns zugänglichen Symptome auszubilden und zu vertiefen. Dabei wird sich voraussichtlich vor Allem ergeben, dass manche Anforderungen, die wir jetzt an die Untersuchten stellen zu müssen glauben, wegfallen müssen, und dass recht viele " Defecte," die wir als Ausdruck der Verblödung anzusprechen geneigt sind, diese Bedeutung nicht haben. Es würde den Rahmen eines Vortrages, der nur einige Hauptprobleme hervorheben soll, überschreiten, hier die Details der Untersuchungsmethodik zu besprechen. Es darf aber doch daran erinnert werden, wie sehr sich innerhalb weniger Jahre die Wertschätzung von *Wissensdefecten* als Ausdruck und Beweis der Demenz verändert hat; zweifellos werden Kenntnisdefecte auch heute noch vielfach als Ausdruck und damit auch als Beweis der Demenz anzuerkennen sein, und in den hierhergehörigen Minderleistungen bei der beginnenden Paralyse werden wir immer eine der typischsten Erscheinungen dieser typischen Demenzerkrankung sehen; aber sehr vieles von dem, was man noch vor gar nicht allzulanger Zeit namentlich auch in gerichtlichen Gutachten als Beweis des Schwachsinns angeführt finden konnte, ist heute als normal anerkannt; die Resultate einschlägiger Untersuchungen, die *Rodenwaldt* seinerzeit auf meine Veranlassung vorgenommen, die zunächst vielfach angezweifelt, bald mehrfach bestätigt und nun wohl allgemein anerkannt sind, haben gelehrt, dass man *allgemeine* Anforderungen überhaupt nach dieser Richtung kaum formulieren kann, dass das Mass der Anforderungen und damit die Würdigung von Minderleistungen nur nach Massgabe *individueller* Verhältnisse geschehen kann, und dass derartige Prüfungen darum zum Mindesten

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nicht geeignet sind, vergleichbare Resultate auf Grund generell festzustellender Standardanforderungen zu ermöglichen.

Die Tendenz der modernen Demenzprüfungsmethoden, die sich in gleicher Richtung besonders zielbewusst in den von *Binet* inaugurierten Testprüfungsmethoden der Intelligenz documentiert, geht nun berechtigterweise dahin, bei der Prüfung und Schätzung das schulmässig oder sonstwie Erworbene nach Möglichkeit auszuschalten.

Wie weit das Resultat bei der Intelligenzprüfung der *Kinder* zu erreichen sein wird, wie weit insbesondere die Testmethode die auf sie gesetzten Hoffnungen auf die Dauer erfüllen wird, kann hier nicht verfolgt werden. Aber auf die Schwierigkeiten, die sich der Erfüllung dieser Forderung beim Erwachsenen entgegenstellen müssen, mag doch eben hingewiesen werden.

Die Aufgabe, deren Lösung hier versucht wird, kommt etwa dem Versuche gleich, die Leistungsfähigkeit einer Maschine zu prüfen, die man leer laufen liesse; die Schwierigkeiten, die eine derartige Prüfung an sich darbietet, werden nun noch vermehrt erscheinen, wenn man berücksichtigt, dass im vorliegenden Falle das wenige Material, das zum Zwecke der Prüfung zur Verfügung gestellt werden muss—selbst wenn es gelänge, dieses auf die conventionellen Ausdrucks- und Verständigungszeichen zu reduzieren —zum grössten Teile durch die Maschine selbst geschaffen ist, und wenn man weiter berücksichtigt, dass die "Maschine" selbst unter dem Einflusse der geleisteten Arbeit ihrerseits Modificationen erfährt, die jeweils ihre spätere Leistungsfähigkeit beeinflussen. Auch bei denjenigen Prüfungen, die theoretisch der gestellten Forderung wirklich zu entsprechen scheinen, wird man diese Einschränkung zu berücksichtigen haben, und man wird erwarten dürfen, dass auch bei der bestausgedachten Prüfung beim Erwachsenen, sich der Einfluss von individuellen, Milieu- und anderen wechselnden Umständen geltend machen muss, so dass als schon darum, und wir kämen damit wieder zu demselben Schlusse, wie durch frühere Ueberlegungen, das Bestehen und besonders die Nachweisbarkeit einer einheitlichen Demenz unwahrscheinlich werden muss.

Dass man gleichwohl zu dem einheitlichen Begriff der Demenz gekommen ist und daran festhält, lässt sich unter Berücksichtigung historischer und practischer Gesichtspunkte verstehen; die Heraushebung der Defectzustände aus der Gesammtmenge der psy-

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chischen Störungen war von vornherein nicht so selbstverständlich als sie uns heute erscheinen mag: hatte doch selbst der Ausdruck Demenz nicht überall und zu allen Zeiten die specifische Bedeutung, die ihm heute zukommt; nachdem aber einmal die Scheidung gemacht war, scheint selbst über die Kreise der Psychiatrie hinaus ein Bedürfnis und Verlangen nach Aufrechterhaltung dieser Trennung sich geltend zu machen. Beweis dafür wohl, dass selbst moderne Gesetzgebungen *neben* der Geisteskrankheit die Geistesschwäche speciell erwähnen zu müssen glaubten, wenn auch mit anderem Erfolge, als bei der Formulierung der Bestimmungen beabsichtigt und erwartet war.

Gerade dieser Erfolg resp. Misserfolg der Einführung des Begriffes einer einheitlichen Demenz in die Praxis mag als ein weiterer Beweis für die derzeit wenigstens bestehende Unmöglichkeit erachtet werden, einen solchen Begriff zu umschreiben. Ich habe mich tatsächlich vergeblich bemüht, eine Umschreibung für das zu finden, was die unvoreingenommene Empirie als Blödsinn resp. Schwachsinn bezeichnet. Im Gegensatz zu der wissenschaftlichen Betrachtung, die von Elementarerscheinungen oder von mehr theoretischen Voraussetzungen ausgeht, ist die Praxis begreiflicherweise geneigt, den Massstab der socialen Brauchbarkeit des Individuums anzulegen; *was* aber social verlangt wird, wird nicht nur nach der gesellschaftlichen Stellung und andern Verhältnissen des zu Beurteilenden, sondern auch nach dem Standpunkte der Urteilenden selbst so verschieden sein, dass ich den erwähnten Versuch aufgeben zu müssen glaubte; so wird es verständlich, dass—ebenso wie die Wissenschaft—auch die Praxis über die Beurteilung der Geistesschwäche desselben Individuums, unter Umständen auf Grund derselben tatsächlichen Unterlagen zu recht verschiedenen Schlüssen kommen kann, ganz zu schweigen von den Differenzen, die sich in dieser Beurteilung zwischen Psychiatern und Laien resp. öffentlicher Meinung ergeben können und gerade auf forens-psychiatrischem Gebiete leider oft genug ergeben.

Hier wiederholt sich tatsächlich mit negativem Vorzeichen, was sich mit positivem auf dem Gebiete der Beurteilung der Intelligenz begiebt; auch hier entscheidet für die Praxis die sociale Wertigkeit und vor Allem—der Erfolg. So kann es nicht wunder nehmen, dass je nach den *practischen* Idealen des zur Beurteilung Be-

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rufenen oder sich berufen Fühlenden, sein Urteil auch über die Intelligenz differieren wird, und dass selbst das Urteil über die gleiche Person mit dem Augenblicke sich ändern kann, wo die praktische Wertigkeit seiner Tätigkeit augenfällig wird: immer auf's neue wiederholt sich die Erfahrung, dass der Gelehrte oder Erfinder für dessen "blödsinnige" und "hirnverbrannte" Tätigkeit die Menge nur ein billiges Lächeln übrig hatte, zum Genie wird, sobald ihm die Sonne des Erfolges zu lächeln beginnt, und umgekehrt liessen sich Beispiele genug dafür aufweisen, dass auch durch senile oder andere geistige Schwächezustände merkbar beeinflusste Producte mit ehrfürchtiger Bewunderung weiter acceptiert werden, wenn der Autor einmal den Ruf seiner Geisteskraft gefestigt hat. Es genüge ein ganz kurzer Hinweis auf diese Verhältnisse um die ganze Compliciertheit der einschlägigen Probleme zu illustrieren.

Unter rein psychiatrischen Gesichtspunkten näher liegt eine andere Analogie, auf die wenigstens ganz kurz hingewiesen sei: mit der *Bewusstseinsstörung*. Auch hier zunächst rein theoretische Differenzen über die Kriterien, von denen die Annahme einer solchen abhängig gemacht werden soll: ich erinnere nur an die Frage, ob die blosse nachträgliche Amnesie eventuell als Beweis für das Vorliegen einer Bewusstseinsstörung geltend gemacht werden darf, mit all ihren Consequenzen, die m. E. dahin geführt haben, dass z. B. der Begriff der Epilepsie durch Einbeziehung der Fugue- und verwandten Zustände eine unerlaubte Ausdehnung gewann. Auch hier die zunächst überraschend erscheinende Erfahrung, zu der uns Untersuchungen an Epileptikern (*Polet*), Typhuskranken (*Hendriks*) und Kranken mit Commotio cerebri geführt haben, dass auch nach Abzug derjenigen Symptome, die der jeweiligen Aetiologie spezifisch zuzugehören scheinen, doch der anscheinend einheitliche Zustand der Benommenheit sich noch jeweils aus verschiedenen Componenten zusammengesetzt erweist, und auch hier wieder das unbefriedigende Gefühl, dass die Summation dieser Elementarsymptome uns nicht *ohne Weiteres* die Benommenheit verständlich macht, so dass wieder der Verdacht sich regen muss, ob nicht doch hinter all diesen Einzelheiten sich noch etwas und gerade das Wesentliche verberge.

Eine Möglichkeit, rein klinisch-empirisch weiter als zu den der Untersuchung zugänglichen Elementarsymptomen durchzudrin-

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gen, besteht nicht; zunächst werden wir uns also auf deren Untersuchung zu beschränken haben; solange sie in verschiedenen Fällen differente Resultate ergeben, werden wir, das möchte ich als Resultat dieser Ueberlegungen betrachten, berechtigt sein, von verschiedenen Demenzformen in dem Sinne zu sprechen, dass nicht nur je nach der differenten Aetiologie wechselnde accessorische Ercheinungen sich zur Demenz hinzugesellen, sondern dass auch die essentielle Demenz selbst sich aus von Form zu Form, vielleicht sogar innerhalb derselben Formen von Fall zu Fall variierenden Symptomen zusammensetzt. Soweit *die* Demenz uns als ein einheitliches Ganzes sich darstellen mag, erscheint, wenn auch nicht erschöpfend, doch befriedigender die Annahme, dass dieser Eindruck aus einer Summationswirkung verschiedener Componenten ensteht als die andere, dass die Einzelsymptome *verschiedene* Folgezustände *einer* gemeinschaftlichen Grundstörung sein sollten.

Noch wenige Worte zur Frage der anatomischen Begründung der Demenz: seit langem kennt man verschiedene anatomische Befunde bei zur Demenz führenden Psychosen und die Bedeutung, die der wissenschaftlichen Untersuchung der Demenz zukommt, hatte man nicht zum Mindesten daraus abgeleitet, *dass* man bei den zur Demenz führenden Formen constant auf anatomische Befunde zu rechnen habe; man hielt sie, wie oben schon einmal gestreift wurde, für in ganz besonderen Masse geeignet, die Brücke zu schlagen zwischen den organischen Gehirnkrankheiten im gewöhnlichen Sinne des Wortes und den reinen Geisteskrankheiten; man hoffte von ihnen aus, auch die anatomischen Grundlagen der letzteren finden zu können. Diese Hoffnungen scheinen nach einer Zeit einigermassen überschwenglicher Hoffnungsseligkeit wieder sehr vermindert; ja—in vielleicht wieder etwas übertriebener Schärfe—wird neuerdings mehrfach betont, dass *alle* Psychosen mit anatomisch nachweisbarer Grundlage zur Demenz führen müssten und dass bei allen anderen das Suchen nach pathologisch-anatomischen Veränderungen ergebnislos bleiben *müsse*.

Auch auf ein Eingehen auf diese Frage muss hier verzichtet werden, und die Besprechung wird sich auf einige kurze Bemerkungen bezüglich der anatomischen Befunde bei solchen Formen zu beschränken haben, die allgemein als verblödende anerkannt sind. Man wird wieder strenge zu scheiden haben zwischen

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den Befunden, die der zugrundeliegenden Erkrankung *überhaupt* zugehören, und dem speciellen anatomischen Ausdruck für die klinisch festgestellten Defecterscheinungen; die Verhältnisse sind in beiden Beziehungen durchaus *nicht* identisch.

In ersterer Beziehung haben uns gerade die Forschungen des letzten Jahrzehnts, vor allem die Feststellungen *Nissls, Alzheimers* und der in ihrem Sinne weiter Arbeitenden wertvolle Fortschritte gebracht. Für eine Reihe von Zuständen haben wir jetzt tatsächlich soweit specifische Befunde, dass uns—ein altes Desiderat und eine sonst schwer empfundene Lücke—die autoptische Untersuchung eine Controlle der klinischen Diagnose liefert oder klinisch unverstandene Fälle erklärt. Es genüge an die Umschreibung eines wirklich für die Paralyse typischen Befundes zu erinnern, an die Differenzierung der senilen und arteriosclerotischen Veränderungen, die Heraushebung der "Alzheimer'schen Krankheit"; es sei ganz besonders betont, dass die wissenschaftliche Aufteilung des grossen Sammeltopfes der Idiotie, der angeborenen und früh erworbenen Defectzustände, im Wesentlichen unter der Führung der pathologischen Anatomie sich vollzieht.

Es muss aber zugestanden werden, dass den verschiedenen anatomisch zu umschreibenden und diagnosticierbaren Zuständen, sowohl denen der Entwicklungsalters als auch denen des höheren Lebensalters, durchaus noch nicht überall gleich specifische und diagnosticierbare psychische Krankheitsbilder entsprechen; (von den begleitenden cerebralen oder eventuell sogar allgemeinkörperlichen Störungen, die vielfach die Diagnose des zugrundeliegenden Zustandes und damit einen Schluss auf den zu erwartenden anatomischen Befund erlauben, muss in diesem Zusammenhange natürlich wieder abgesehen werden).

Von Beziehungen zwischen den verschiedenen anatomischen Befunden und den verschiedenen Formen der Demenz an sich kann begreiflicherweise noch viel weniger die Rede sein, und die oben schon erwähnte Erfahrung, dass die paralytische Demenz von Fall zu Fall noch verschieden sich gestalten kann, während doch der anatomische Process der Paralyse sicher ein einheitlicher ist, wird gewiss dazu beitragen, unsere Hoffnungen nach dieser Richtung nicht all zu hoch zu schrauben.

Selbst eine andere Frage ist von der Lösung noch viel weiter entfernt und gibt der zukünftigen Forschung noch viel mehr zu

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tun, als man oberflächlich vermuten möchte: die *quantitativen* Beziehungen zwischen der Intensität der anatomischen Schädigung und dem Grade der Demenz. Die naheliegende Voraussetzung, dass dem Ausfall auf psychischem Gebiete auch ein Minus an functionierender Substanz entsprechen werde, erscheint allerdings fast überall erfüllt: der allegemeinste Befund bei den Defectzuständen ist der der Agenesie oder Atrophie des Gehirns, und in den seltenen Ausnahmefällen, die zu dieser Voraussetzung in Widerspruch zu stehen scheinen, lässt sich mühelos nachweisen, dass die Volumen- oder Gewichtszunahme auf Rechnung *nicht* functionierenden Gewebes zu setzen ist. Es erscheint aber ganz unmöglich, Beziehungen zwischen dem *Grade* der Atrophie und der Schwere der Demenz etwa in dem Sinne herzustellen, dass auf Grund des Gewichtes des Gehirns oder des mikroskopischen Aussehens der Hirnrinde ein Schluss auf den Grad der in vivo constatierten Demenz gezogen werden könnte, oder gar umgekehrt aus dem nachgewiesenen Grade des Schwachsinns auf die Schwere der post mortem zu erwartenden Veränderungen geschlossen werden könnte: man findet immer wieder einmal paralytische Hirnrinden, deren hochgradige Atrophie im Verhältnis zu den klinisch nachweisbaren geringen Ausfallserscheinungen überrascht, andere, deren geringe Atrophie keine genügende Erklärung für die hochgradige Demenz ergibt, die in vivo festgestellt wurde, und man wird in diesem Zusammenhange an die Schwierigkeiten denken dürfen, die Remissionen der Paralyse mit dem anatomischen Befund zu vereinbaren, auch wenn man die oben schon einmal gestreifte Tatsache berücksichtigt, dass die *besten* und ausgiebigsten Remissionen durch Schwinden der psychotischen Erscheinungen im engeren Sinne zustande kommen; dass auch die reine Demenz einer gewissen Besserung zugänglich ist, ist nicht zu bestreiten, und die Erfahrung schliesst sich in allgemein-pathologischer Beziehung dem an, was oben über den Zusammenhang zwischen transitorischen und dauernden Ausfallserscheinungen überhaupt ausgeführt wurde. Es ist sehr gut denkbar—und in diesem Sinne sprechen die Erfahrungen über den Rückgang der paroxysmalen resp. postparoxysmalen körperlichen Erscheinungen bei der Paralyse, denen ja ein *sehr* grober anatomischer Prozess entspricht, dass auch derartige Prozesse einer gewissen anatomischen Rückbildung zugänglich sind; viel wichtiger aber scheint für die Auffassung

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dieser Verhältnisse ein anderer Gesichtspunkt, der vielleicht nicht in allen einschlägigen Ueberlegungen genügend berücksichtigt wird: dass uns überhaupt über das Verhältnis der nachweislichen anatomischen Veränderungen zu den daraus notwendigerweise zu folgernden Ausfallserscheinungen recht wenig wirklich bekannt ist, dass wir, anders ausgedrückt, kaum für irgend ein nervöses Gebilde auch nur mit einiger Sicherheit anzugeben imstande sind, von welchem Grade der Schädigung an, wir daraus die—sei es zeitliche, sei es dauernde—Aufhebung der Function ableiten dürfen. Das gilt schon für relativ einfache Gebilde, deren Function uns wenigstens insofern bekannt ist, als wir wissen, welche *Art* von Störungen ihrem Ausfall entspricht; man hat immer wieder Gelegenheit, sich zu wundern, wie schwer es ist, klinisch nachgewiesene Seitenstrangsymptome und anatomisch nachweisbare Pyramidendegeneration *quantitativ* auch nur einigermassen zur Deckung zu bringen, auch dann, wenn man nur *die* Fälle berücksichtigt, in denen Verlauf und Dauer der Veränderungen den Schluss erlauben, dass man es klinisch und anatomisch mit Dauerzuständen zu tun hat; es wäre auch dem Erfahrenen sicher kaum möglich sich aus den anatomisch gefundenen Hinterstrangerscheinungen über die Intensität der Symptome in vivo mehr als ein ganz oberflächliches Urteil zu bilden; ja sogar die anscheinend noch viel einfachere Aufgabe, aus dem anatomischen Zustand eines gewöhnlichen gemischten Nerven sich ein Bild von der dem Nerven verbliebenen (oder eventuell wieder erworbenen) Functionsfähigkeit zu machen, erscheint auf Grund der derzeitigen Kenntnisse und unter Anwendung der praktisch in Anwendung zu bringenden Untersuchungsmethoden unmöglich.

Dass diese letzteren Schwierigkeiten nicht ganz grundsätzlicher und unüberwindlicher Natur sind, lehren wohl die Untersuchungen *Bethes* über die Structuren der functionierenden Substanz, wenn es auch noch nicht gelungen zu sein scheint, dieselben für die uns beschäftigenden Fragen heranzuziehen. Dass auch, wenn dies gelungen wäre, von da aus noch ein weiter Schritt wäre bis zur Uebertragung der Kenntnisse auf die complicierten Gebilde der Hirnrinde mit ihren mannigfachen Organen mit noch ganz unbekannter Functionsverteilung, bedarf keiner Ausführung; immerhin wäre es schon als grosser Fortschritt zu erachten, wenn es gelänge zunächst in einfacheren Gebilden—wie die oben genannten

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Bahnen der weissen Substanz, später auch für compliciertere Gebilde, Teile des Gehirns oder das ganze Gehirn ein Mass für die Menge ausgefallener und functionsunfähiger Substanz einerseits, erhaltener und noch functionierender anderseits zu finden, und ein Fortschritt nach dieser Richtung erscheint tatsächlich möglich, ohne dass man diese Hoffnung auf die Möglichkeit principiell ganz neuer Untersuchungsmethoden zu gründen braucht.

Nach einer anderen Richtung sind wenigstens einige Kenntnisse und Erfahrungen schon gesammelt: wenn es uns auch, wie oben erörtert, ***nicht*** möglich ist, auch nur ungefähr, aus dem Grade der Atrophie oder sonstigen Veränderung des Gehirns, ein *absolutes* Mass der entstandenen Functionseinbusse abzuleiten, so können wir doch die Schädigung verschiedener Partien des Gehirns untereinander quantitativ vergleichen, und wir werden bei deutlichen Differenzen daraus ohne allzugroben Fehler auf entsprechende Differenzen in der Störung derjenigen Functionen schliessen dürfen, die den verschiedenen Regionen entsprechen—soweit uns diese Functionen auf Grund anderweitiger Erfahrungen bekannt sind; tatsächlich eröffnet sich uns auf diesem Wege allmählich eine Einsicht in jene Fälle von Demenz, die mit Herdsymptomen gepaart gehen, oder richtiger vielleicht, die verschiedenen Gebiete derartig ungleichmässig betreffen, dass einzelne Ausfälle als Herdsymptome im Sinne der Hirnpathologie sich hervorheben.

Nach Massgabe der gegenwärtig auf grosse Uebersichtspraeparate anwendbaren Färbemethoden werden wir uns zunächst mit der Feststellung relativ grober Differenzen zu begnügen haben: es ist aber nur eine Frage der vervollkommneten Technik resp. der genügenden Kräfte und Mittel, wann es gelingen wird, auch die feineren Methoden für solche topographische Untersuchungen heranzuziehen und entsprechende Schlüsse auch aus feineren localen Differenzen abzuleiten.

Immerhin werden uns auch noch so erfolgreiche einschlägige Arbeiten nur eine bestimmte Categorie von Differenzen erhellen helfen, die zudem, wie es scheint, nur für einen verhältnismässig geringen Teil aller durch relativ grobe Schädigungen bedingten Demenzformen überhaupt in Betracht kommen, und die bei allem Interesse, das sie mir zu bieten scheinen, doch nicht *die* Rolle spielen, die den eingangs ausführlicher besprochenen Unterschieden zukommt.

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Es ist ein Wagnis heute zu der Frage Stellung zu nehmen, ob wir erwarten dürfen, jemals aus dem anatomischen Befunde die qualitativen Differenzen der verschiedenen Demenzformen ableiten zu können, wie nochmals erwähnt sei, nicht in dem Sinne, dass wir aus dem Gesammtbefunde die verschiedenen zur Demenz führenden *Processe* diagnosticieren können, etwa ebenso, wie wir die progressive Paralyse zu diagnosticieren imstande sind, sondern in dem Sinne, dass uns der Befund einen Einblick in das Zustandekommen der einzelnen wechselnden Componenten der Defectzustände eröffnen würde. Dass der weitere Ausbau der groben topographischen Verteilung der Störungen hier weiteren Aufschluss geben wird, etwa im Sinne *Flechsig'scher* Anschauungen, erscheint sehr wenig wahrscheinlich; es bleiben dann zwei Möglichkeiten zu erwägen.

Die eine dieser Möglichkeiten wäre die, dass man gewissermassen senkrecht zu der topographischen Localisation die im wesentlichen im Sinne einer Projection der Körperoberfläche auf die Gehirnrinde geschieht, eine zweite annehmen dürfte, derzufolge *innerhalb* circumscripter, etwa dem Hören, Sehen oder ähnlich umgrenzten Functionen entsprechender Gebiete—bestimmten Elementen bestimmte noch feiner differenzierte Functionen—etwa die Retention, die Association u. ä.—zugeteilt wären. Diese Elemente könnten innerhalb der Hirnrinde zerstreut etwa nur morphologisch differenziert und characterisiert sein, oder sie könnten mit oder ohne solche morphologisch erkennbare Differenzierung bestimmten Partien der Hirnrinde schichtenweise zugeordnet sein. Gerade die letztere Annahme entspräche grundsätzlichen *Wernicke'*schen Anschauungen, der ja, wenn auch mit begreiflicher Vorsicht, die Möglichkeit einer solchen psychologischen Localisation innerhalb umschriebener Hirnrindenpartien erwog. Es muss aber doch anerkannt werden, dass diese Annahme—wenn auch neuerdings sich wieder einschlägige Erwägungen hervorgewagt haben—Hypothese geblieben ist, und dass vor Allem zur Zeit noch nicht die Rede davon sein kann, tatsächlich bestimmte "psychologische" Ausfälle zu Laesionen bestimmter Rindenschichten resp. zu schichtweisen Ausfällen in Beziehung zu setzen.

Die zweite zu erwägende Möglichkeit wäre die, dass die Differenzen durch die *Art* des anatomischen Processes bedingt wären, in dem Sinne, dass dadurch nicht nur der Gesammtverlauf und damit

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im Wesentlichen die Rubricierung im System der Psychosen bedingt wäre, sondern derart, dass es tatsächlich gelänge, zwischen den verschiedenen anatomischen Laesionen und den speciellen Erscheinungen Beziehungen herzustellen.

Der Gedanke erscheint mir nicht ganz phantastisch, dass es vielleicht einmal gelingen kann, bestimmte anatomische Veränderungen zu umschreiben, die etwa in besonderer Weise geeignet sind, jene *alten* Structuren zu vernichten, die wir als Grundlage der Erinnerungen annehmen; andere, die etwa dem Neuerwerb solcher Structuren erschweren mögen und wieder andere die eine besondere Labilität und Vergänglichkeit derselben zur Folge haben, oder noch andre, die jene Activierung erschweren, von der wir uns das Arbeiten mit dem einmal erworbenen geistigen Fonds zum Teile wenigstens abhängig denken. Es hat keinen Wert derartige Hypothesen weiter auszuspinnen; denn es muss nachdrücklich anerkannt werden, dass ihnen tatsächliche Erfahrungen zur Zeit noch nicht zu Grunde liegen.

Man wird sogar zugeben dürfen, dass heute selbst zum Aussprechen derartiger Möglichkeiten mehr Optimismus oder Verwegenheit gehört als etwa vor 20 Jahren, als Wernicke die grundlegende Einleitung zu dem "Grundriss" schrieb, in der er die Auffassung der Geisteskrankheiten als Gehirnkrankheiten wesentlich sich stützend auf die Herderkrankungen im engeren Sinne und die Ausfallssymptone im Besonderen durchzuführen versuchte. Die zweifellose grössere Skepsis in der Frage einer anatomischen *Erklärung* psychischer Störungen ist zum Teil wohl darauf zurückzuführen, dass sich auch viele Hoffnungen bezüglich der Erklärung reiner Herderscheinungen, namentlich bezüglich der feineren Localisation, nicht in dem Masse erfüllt haben, wie man nach den glänzenden Anfangsleistungen erwarten mochte; zum Teil entspricht die veränderte Stellung dem Umschwung all' unserer Auffassungen vom psychischen Geschehen, wie er sich mit zunehmender Deutlichkeit in den letzten Jahren vollzieht und dessen Wurzeln nachzugehen nicht ausschliesslich, ja nicht einmal in erster Linie Aufgabe des Psychiaters ist.

Es kann verständlich erscheinen, wenn sich unter diesen Umständen eine gewisse Skepsis und Resignation geltend zu machen droht, wenn das Interesse an der eigentlichen klinischen Psychiatrie wieder zu erlahmen droht, und die zu ihrer Pflege Berufenen

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sich neuerdings wieder mit Vorliebe Nachbargebieten zuwenden.

Ich glaube nicht, dass diese Resignation berechtigt ist: allerdings auch auf dem engbegrenzten Gebiete, das wir flüchtig eben zu übersehen versuchten, mussten viele Lücken gezeigt werden und darunter manche, deren Anfüllung in absehbarer Zeit nicht zu erwarten steht; daneben aber konnten zahlreiche Fragen gestellt werden, deren Beantwortung mit den uns zur Verfügung stehenden Mitteln denkbar ist.

So lange das der Fall ist, hat die Wissenschaft keinen Grund zur Resignation; ich schliesse mit dem aufrichtigen Wunsche, dass es auch dem Institute, dessen Eröffnung wir feiern, gegeben sei, an der Lösung dieser Fragen mit Erfolg mitzuarbeiten.

ABSTRACT.

The dementia problem deserves being discussed with a strictly scientific consideration, free of all compromises with practical needs. The term "dementia" is preferably reserved to defects which are not accessible to restitution. How difficult that is is shown by the protracted climacteric and anxiety depressions, in which the really temporary defect-phenomena have been taken prematurely as permanent. But it is not excluded that the same process which at one time has caused a deficit open to restitution might not possibly lead later to a lasting damage in the same individual; and it may be that the processes which are at the bottom of the acute symptoms may go parallel with the processes which cause the defect and that these latter processes, after the recovery from the acute disorder, may remain stationary or even go further, as for instance, in general paralysis (Schroeder). Presbyophrenic conditions (not qualified as dementia by Wernicke) following an acute infection or an acute vascular disturbance or even a break in the general circulation, may first be capable of total restitution, but may recur with the same kind of damage and become less and less or finally not at all capable of restitution; the same holds for Korsakow's psychosis, and decidedly for epilepsy, the lasting condition of which can to a certain extent be recognized as a sum of the residuals of the successive acute stages. A similar condition pertains in general paralysis where the restitution becomes progressively less complete. This fact may open the road to a brain-pathological interpretation of psychoses.

Far greater is the difficulty of the question of what kind and what extent the deficit of function must be to constitute a dementia in a scientific sense of the word. Didactic usage does not speak of a unitary dementia with mere quantitative differences, but of paralytic, senile, arteriosclerotic, hebephrenic and epileptic dementia. In doing so we do not, of course, specify the dementia, but its foundation.

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Heilbronner then turns to the problem of a possible central factor in intelligence (Krueger and Spearman) which might be made accessible to measurement. Such a factor has been determined (not, however, including the learning by heart, which, as we know, can be high in an idiot) clinching the standard of many simpler reactions; but this central factor is still far from "the intelligence" in its higher sense. Neither for intelligence nor for dementia are we likely to evolve unitary concepts or measures which would allow us to limit our determinations to merely one central factor; nevertheless attempts of this kind have been made by Foerster and Gregor in general paralysis. In paranoia and dementia præcox it will always be questionable whether the existence of deficits of judgment or actual defects should be laid to a "dementia," and paralytic defects differ from the defects in epilepsy; the profound retention defects in presbyophrenia do not occur in epilepsy and are late in general paralysis; dementia præcox differs from idiocy, etc.; there always remains the question whether the deficits demonstrated by the various measures of dementia really constitute what we should call the *essence* of the dementia. Penon found old circular cases with much poorer results than are often obtained in dementia præcox, although the appearance of the patient suggests far less dementia. Discussions of what this essence consists in and whether it is a unitary and finally characteristic deficit, a true dementia, would not promise much. Even what is an excusable defect of knowledge compatible with normality is a hazy question since the study of Prussian recruits by Rodenwaldt.

Binet tries to eliminate the acquisitions from mere school drill; but the application of the tests to the adult is still an open problem. To use success in general as a criterion of intelligence might also suggest many difficulties in deciding as to what we shall accept as sufficient success.

A similar difficulty exists in the attempts to measure disorders of *consciousness* by the subsequent amnesia. By too liberal a use of this criterion epilepsy has been extended beyond excusable bounds. Studies of epileptics, typhoid cases and patients with commotio cerebri show the difficulty of trying to understand the disorder of sensorium out of the individual elementary defects. Altogether it seems more likely that dementia is the result of summation of various components, rather than the varying consequence of one unitary fundamental disorder.

Passing to the anatomical foundation of dementia, Heilbronner refers first to the modern tendency to claim that all psychoses with anatomically demonstrable foundation must lead to dementia, and that in all the others a search for pathological-anatomical changes must necessarily meet with negative results. Anatomically valuable differentiations have been established especially by Nissl and Alzheimer in the organic dementias and even in idiocy. These are more easily diagnosed from neurological symptoms than from the distinctions of the dementia. Even the parallelism between the quantitative extent of the lesion and the degree of dementia is beyond more than approximate estimates. An identification of special psychological defects with defects of special cortex-layers is even more proble-

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matic, notwithstanding the attractiveness of pertinent hypotheses. An attempt like Wernicke's, that of wanting to present the mental disorders as brain diseases of special localization, certainly meets with more skepsis to-day than 20 years ago.

In closing the speaker expresses the hope that the new institute may collaborate successfully in the solution of the questions touched.

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THE INTER-RELATION OF THE BIOGENETIC PSYCHOSES.*

By ERNEST JONES, M.D. (Lond.), M.R.C.P. (Lond.),
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Whether the worker be actuated primarily by therapeutic motives or by the desire to increase scientific knowledge it is in either case impossible for him to carry out any detailed explorations in the mental processes of his patients without acquiring as a result some notions, however tentative, regarding the distinctions between the various types of disorders with which he has to deal. Those who have used in their investigations the most thorough of the psychological methods, I refer to the psychoanalytical school inaugurated by Freud, have, it is true, chiefly devoted their attention to the numerous problems of individual psychopathology, and have not for the most part displayed any very special interest in the not always profitable questions with which nosology is mainly concerned. Nevertheless, in the course of years, and, one might almost say, automatically, certain general conceptions of a nosological character have gradually crystallized out from their work, some of which I desire to bring now before the notice of this gathering. I do so at the request of Dr. Adolf Meyer, than whom no one knows better how tentative and fragmentary such a contribution must necessarily be.

As the greater part of psycho-analytical work has been done in connection with the neuroses, it is natural that here the greatest progress has been made, and indeed it may be said that in this field our nosological conceptions are approaching a stage of completion. It has been found that the two main types of neurosis, the obsessional neurosis (*Zwangsneurose*) and hysteria, present clear distinctions in their essential nature and in their psychological mechanisms, so that it is now nearly always possible not only to separate them in general, but also to estimate in a mixed case how much of the content belongs to the one condition and how much to

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 18, 1913.

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the other.[1] With regard to the large group of symptoms, such as most of the phobias, various vaso-motor manifestations, and so on, that have traditionally been considered to form part of hysteria, but which Babinski and others have in recent years attempted to split off from this, psycho-analysis has shown that they are in their nature so closely allied to hysteria as to make it preferable still to include them under this term; according to psycho-analysis, therefore, hysteria is held to cover at least as wide a field as it ever did. The progress made in the more obscure problem of classifying the various anxiety states (*Angstzustände*) has been slower, as might have been expected, but even here a considerable degree of insight has been attained in recognizing the distinctions and resemblances between these states, and we are now in a position at least to formulate the problem in a more satisfactory way than was previously possible.[2]

In the field of the psychoses proper (the relatively small group of "organic" psychoses, such as general paralysis of the insane, arterio-sclerotic insanity and the like, are here excluded) less has been accomplished, but still something. Light has been thrown both on the distinctions and inter-relations between several of the individual psychoses and on the relation of the neuroses to the psychoses in general. The first step was the demonstration, by Jung, Abraham, Bleuler, and others,[3] that the commonest psychosis, dementia præcox (Bleuler's *Schizophrenie*, or, to use the more recent term of Freud's, *Paraphrenia*), exhibits unconscious psychogenetic mechanisms akin to those met with in the neuroses, and that the disease manifestations represent an introversion of interest accompanying a regression of mental processes towards a more infantile type, one aptly described by Bleuler under the expression "autism." Some two years ago Freud published a study of paranoia,[4] which from the point of view of nosology

[1] See Freud: Jahrbuch f. psychoanalytische Forschungen, Bd. I, or in default of this Hitschmann, "Freud's Theories of the Neuroses," Engl. Transl. by Payne, 1913, Chapters VI and VII.

[2] See Ernest Jones: Papers on Psycho-Analysis, 1912, Ch. VIII, "The Pathology of Morbid Anxiety," and "The Relation between the Anxiety Neurosis and Anxiety-Hysteria," Journal of Abnormal Psychology, April, 1913.

[3] These works are reviewed in the number of the Jahrbuch already referred to.

[4] Freud. Jahrbuch, Bd. III, S. I.

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alone is of remarkable interest. In it he showed that the close connection clinically known to obtain between paranoia, dementia paranoides, and paraphrenia, has its exact counterpart in the psychological basis of these three conditions. They represent, namely, in this order an increasing regression towards more and more primitive stages of ontogenetic development, each corresponding with what may be called a caricature of a phase of growth through which every individual has to pass; we have here, therefore, a psychological explanation of the familiar clinical finding that the same case which at its onset appeared to be one of simple paranoia may later pass through the stage of dementia paranoides and terminate in a frank dementia. From this point of view one would be inclined to regard the type of " pure " paranoia that does not go on to dementia as not differing essentially from paraphrenia, and, as representing merely a milder form of a very similar disease process, a conclusion already reached on clinical grounds by a number of psychiatrists. The differences that these three conditions show in extent of regression will in the future no doubt be correlated with variations in the original mental disposition of the individual, and may perhaps also be described in terms of racial atavism.

We are not yet in a position profitably to discuss the causes of the differences between the neuroses and the psychoses, but the preliminary task has been entered on of defining wherein these differences reside. The most satisfactory formulation of them at present possible would seem to be this: that the introversion or turning away of interest from the outer world, which is the most characteristic feature of both, has proceeded to a farther degree in the case of the psychoses, carrying with a loss, absolute or relative, of the " feeling for reality (Janet's *sentiment du réel*, Freud's *Realitätsgefühl*). Even here, however, the difference would seem to be one of degree rather than of kind, for, on the one hand, the feeling for reality is generally retained to some extent in most cases of psychosis, while, on the other, it is always partly abrogated in every case of neurosis and occasionally for a short time altogether; from this hint one might surmise that possibly the distinction between the two groups is less sharp than is usually thought. This consideration goes to render more intelligible the curious association of neurotic and psychotic mani-

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festations so often found existing in the same case, the classical example of which is the frequent combination of hysterical and catatonic symptoms. From a psychological, as well as from a clinical point of view, it may be said that in such cases the hysterical product covers the catatonic one. What has happened is that the reaction of the individual towards various psychical conflicts, which he cannot resolve, has led first to the creation of hysterical symptoms, and then, these failing in their function of a defence mechanism, to a further degree of introversion, culminating in catatonia. It should not be forgotten in this connection that symptoms of mental disorder are very properly so called; they never make up the disorder in themselves, but are only symptomatic of it. Indeed, it is psychologically more accurate to regard them not so much as direct signs of the disease itself as evidences of desperate attempts to remedy it; they indicate the action of protective processes rather than of destructive ones.

Physical symptoms of hysteria ("conversion hysteria") are not the only neurotic manifestations that may conceal a more serious state of affairs. Occasionally, and this is not so widely known as it should be, hysterical phobias ("anxiety hysteria") may also play the same part. Cases even occur of absolutely typical anxiety-hysteria where, after the phobias are made to disappear by treatment, paraphrenic manifestations, particularly of the paranoid variety, show themselves for the first time, almost giving the impression that the neurosis had in a way served to protect the person from the necessity of erecting a second line of defence, paraphrenia, until it was removed. We know that there are patients who are not strong enough to live without their protecting neurosis, and the development of a paraphrenia is one of the calamities that may occur when it is taken away. Cases of this sort are fortunately very rare, but they are the source of much anxiety to the physician responsible for the care of them, so that the matter is one deserving of special attention. Then, again, epileptiform attacks of psychogenic origin, clinically indistinguishable from true epileptic fits, may also occur as a cover-syndrome, and quite apart from the familiar paraphrenic epileptiform seizures, the origin of which is as yet not known. The obsessional neurosis may at times be exceedingly difficult to distinguish from paranoid conditions, and, though I have never seen a clear case

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of the kind, one could readily imagine the two being combined in the same way that hysteria and catatonia so often are.

One of the most interesting nosological questions of present-day psychiatry is that concerning the status of manic-depressive insanity. As is well known, Kræpelin's gradual extension of the conception during the past six or eight years has been effected mainly at the expense of the paraphrenic group, the first step in this direction having been taken by recognizing that catalepsy and other catatonic symptoms might also occur in manic-depressive insanity; even the appearance of a considerable terminal deterioration is now held not necessarily to exclude this diagnosis. A striking result of this tendency has been an increasing difficulty in establishing a demarcation between the two groups, the endeavor being accompanied by a certain artificiality and an undeniable arbitrariness. Although Kræpelin himself still maintains that the two conditions are fundamentally distinct from each other in their nature, there are not wanting psychiatrists, and even in his own school, who are beginning to doubt this, and who regard the difficulty of separating them clinically as indicating that an essential connection subsists between them. An interesting example of this trend is furnished by Urstein's recent work,[5] in which the conclusion is reached that manic-depressive insanity is to be regarded as a syndrome of catatonia.

Psycho-analytic investigations of this condition have as yet been too sparse to allow of more than fragmentary contributions being made to the nosological problem, but, in the light of the considerations just mentioned, these possess a certain interest. In the first place, as confirming the doubts that have elsewhere been cast on the available clinical criteria, it has been shown by Brill[6] that cases occur, clinically indistinguishable from manic-depressive insanity, but which prove on psycho-analysis to be of the nature of anxiety-hysteria. In rare instances this has also been my own experience. There comes to my mind, particularly, the case of a male patient, kindly sent to me by Dr. Adolf Meyer, where the diagnosis of manic-depressive insanity had been made by Kræpelin himself and several other psychiatrists. Clinically,

[5] Urstein: Das manisch-depressives Irresein als Erscheinungsform der Katatonie. 1912.

[6] Brill: Psychanalysis. 1912. Ch. III. "The Actual Neuroses."

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it was a typical case of cyclothymia, of the depressive variety, extending over the greater part of the patient's life, but both the psycho-analysis and the subsequent course of the case showed that it was beyond doubt one of anxiety-hysteria. Such cases must, of course, be separated from the true manic-depressive group, but I know of no way in which this can be done at present except through psycho-analysis. As regards the true variety, Abraham[7] has, in a recent paper, drawn a striking analogy betwen the psychological structure of the manic-depressive syndrome and that of the obsessional neurosis, while, in a case reported some four years ago,[8] I called attention to the presence of psychogenetic mechanisms similar to those met with in paraphrenia. Much more work needs to be done before any definite conclusions can be formulated from the psycho-analytic point of view as to the nosological status of manic-depressive insanity, but I have little hesitation in hazarding the opinion, on general principles, that the relation between it and paraphrenia will be found to be of the same nature as that subsisting between hysteria and paraphrenia; in other words, that the two conditions represent merely different stages and varieties of a profound introversion rather than two entirely distinct disease processes. It is further probable, to my mind, that manic-depressive insanity, with perhaps other conditions, notably certain of the epilepsies, may profitably be regarded as representing intermediary stages, so far as the extent of the introversion is concerned, between the neuroses and paraphrenia. In any case, it seems to show a number of links connecting it in both directions. On the one side we see that its psychological structure can be closely paralleled by that of the obsessional neurosis and that a perfectly typical manic-depressive syndrome may occur in anxiety hysteria, while, on the other side, the resemblances it bears to paraphrenia are only too familiar to the diagnostician; the intimate associations between it and catatonia are emphasized by Urstein, being, indeed, a direct result of Kræpelin's redistribution, itself the inevitable product of faithful observation, and, on the other hand, the prominence of paranoid

[7] Abraham: "Ansätze zur psychoanalytischen Erforschung und Behandlung des manisch-depressiven Irreseins," Zentralbl. f. Psychoanalyse, Jahrg. II, 1912.

[8] "Psycho-Analytic Notes on a Case of Hypomania," American Journal of Insanity, Oct., 1909.

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delusions in so many cases has actually led some psychiatrists, notably Specht,* to advance the astonishing proposition that the greater part of the paranoia group should be included under it, a fact which at all events indicates that the transition of such cases to dementia paranoides would be less violent than might at first sight be imagined.

I must frankly confess that the train of thought on which these views are based constitutes to a great extent a reversion to an older attitude, discarded by most recent psychiatrists, one which, being opposed to any form of faculty psychology, lays stress on the features common to all varieties of psychogenetic disorders. One holds, in short, that in this field we have to deal with various types of reaction to a fundamentally allied group of difficulties, namely, intrapsychical conflicts of a biological nature, rather than with a number of entirely distinct "disease entities." This attitude towards the problems of nosological psychopathology is in full accord with the tendency advocated by our distinguished host, Dr. Adolf Meyer, who has constantly urged that we should study our patients from a broader point of view and regard them as biological organisms striving to remedy their maladjustments. It is true that this attitude in no way relieves us from the necessity of trying to define the different types of reaction that we encounter, a matter that is evidently of cardinal importance for both prognosis and therapeutics, and I would only add in conclusion that even in this field of diagnosis alone the services rendered by psycho-analysis are not to be underestimated.

*Specht: "Ueber die klinische Kardinalfrage der Paranoia." Zentralblatt für Nervenheilkunde und Psychiatrie. 1908.

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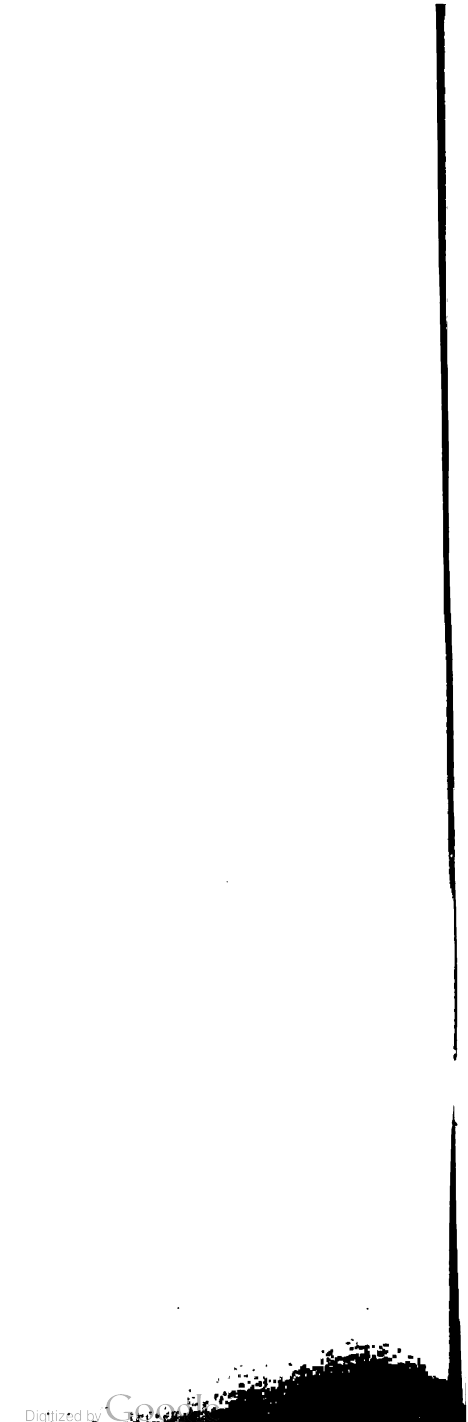
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PROGNOSTIC PRINCIPLES IN THE BIOGENETIC PSYCHOSES, WITH SPECIAL REFERENCE TO THE CATATONIC SYNDROME.*

By GEORGE H. KIRBY, M.D.,
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At the present time two widely divergent views are held regarding the probable nature of the so-called functional psychoses, and, as would be expected, equally opposing views are entertained regarding the prognostic principles which underlie these disorders.

The first standpoint, that of the Kraepelinian school, is the outgrowth of an attempt to make use of symptoms of prognostic value in the formation of clinical groups. Reasoning from what he found to be the outcome in psychoses, Kraepelin taught that a sufficiently keen analysis of clinical pictures permitted one to identify in the early stages of the disorders certain symptoms or groups of symptoms which indicated either a good or bad prognosis, and thus one could differentiate two types of psychosis, manic-depressive insanity, a recoverable form, and dementia præcox, a deteriorating form.

Kraepelin went further and maintained that we had to do here with two different and distinct *disease processes*, although in neither instance was the cause or nature of the disease known, and least of all were definite anatomical changes demonstrable.

Much of the criticism that Kraepelin later encountered was reasonably grounded and expressed the clinical experience that while the symptomatological distinctions which he put forth allowed a considerable number of cases to be prognostically grouped, yet numerous other cases did not yield to any such differentiation. In some cases there appeared to be puzzling combinations of symptoms of supposedly diagnostic value; in others deterioration seemed imminent or even established, yet recovery took place; many benign

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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and recurrent psychoses could not be harmonized with the manic-depressive formula.

Kraepelin's own inability to successfully circumscribe the two groups in question is clearly seen from the diagnoses made annually in his own clinic. We find, for instance, dementia præcox rising to 52 per cent of the admissions, and then falling back to 18 per cent—manic-depressive naturally swung in the opposite direction.[1] An investigation into the subsequent course of 468 cases diagnosed by Kraepelin as dementia præcox led to the conclusion that 29 per cent of these were really manic-depressive cases (Zendig). In Zürich Bleuler looks upon 30 per cent of the admissions as dementia præcox;[2] at Ward's Island we place about 12 per cent in this group,[3] while in Munich Kraepelin considered in 1909 only about 7 per cent to be cases of dementia præcox.[4]

All these facts prove that at least very great practical difficulties are encountered when one tries to differentiate the psychoses by the Kraepelinian method; serious doubts have arisen in the minds of many as to the validity of the distinctions put forward, and it is questioned whether or not one is justified to speak of definite diseases with fixed course and outcome. It will be conceded that prognostic studies so far made can have little real value when the clinical groups are so vaguely defined.

In opposition to Kraepelin's disease process doctrine and claim that a correct diagnosis practically settled the prognosis, Prof. Meyer formulated a conception which has furnished us with many new and fruitful viewpoints; the importance of factors overlooked or ignored in the former hypothesis has been demonstrated and the whole question of prognosis has been put on an entirely different basis. This conception rests on a psychobiological interpretation of these psychoses and emphasizes the importance of psychological events as factors of dynamic value. When one takes into consideration the various forces at work in the life histories of cases and uses them in chains of cause and effect, then these disorders become more and more understandable as biological reactions of the mental type, the psychosis expressing a defective biological adaptation of the individual. This conception makes it unnecessary to assume that the outcome is determined by the kind or severity of an unknown disease process, but rather that the course of events and the termination are accounted for by the dynamic

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forces at work in an individual life and by the type of reaction itself, some mental reactions being biologically unfavorable for return to normal attitudes, while others are less so.[5]

In the purest forms of the manic-depressive reaction type we have a disorder expressed chiefly as an emotional deviation and understandable largely as an exaggeration or diminution of conditions belonging to our normal life. The symptomatology of the typical attack, with the swings in mood, the thinking disorder and psychomotor disturbance, is remarkably free from features which are not apparently open to correction later on; hence both the foundation and type of reaction imply a good prognosis.

In dementia præcox, on the other hand, the psychosis appears to be the outgrowth of a long-continued period of unhealthy biological adjustments on the part of the individual. Prof. Meyer was the first to show how clear indications of tendencies toward defective adaptation could so often be recognized long before the obvious mental breakdown, in many cases even very early in life. The personalities which develop dementia præcox show too often to be disregarded early deficiencies in the instinctive life, faulty mental habits, inefficient application to reality, seclusiveness. peculiar judgment defects and drifting away from concrete interests, tendencies which, if unchecked, lead quite naturally to disastrous results. In the psychosis itself, when analysis is possible, we find abundant evidence that bad mental habits, inadequate dealing with complexes and conflicts particularly in the sexual sphere, failure of healthy interests and exclusion of normal thinking, have eventually undermined the personality and brought about the mental dilapidation. It would be surprising if the organic substructure of mental life, the brain, did not also suffer.

We are now sufficiently well acquainted with a few biological reaction types to use them as prognostic guides; these types do not, however, always occur in clear-cut and easily distinguishable form. There are apparently a number of types as yet poorly defined, and also various transition forms probably exist, so that the formulation of a rational prognosis always requires a careful weighing of the different factors entering into the individual case. This is what a psychobiological interpretation encourages, and puts emphasis on the possibility of dynamic factors being modified for the better or the worse. It seems to us very improbable that

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general prognostic principles, such as Kraepelin brought forward, can ever be applied to large groups of biogenetic psychoses, such as we have been attempting to make. The whole biological conception of the development of these psychoses is against this possibility.

When one reviews a series of well worked up cases one cannot escape the conviction that, when we get away from the characteristic foundation and evolution of dementia præcox, then the so-called diagnostic symptoms and signs lose most of their prognostic meaning. As a contribution to our knowledge of the prognostic value of a symptom group, I wish to report the result of our observations on the so-called catatonic syndrome. It appears to us that this group of symptoms lends itself particularly well to the elucidation of some of the prognostic principles just discussed.

As is well known, Kraepelin claimed for his dementia præcox group practically all non-organic cases with catatonic symptoms and looked upon these manifestations as especially significant of a deterioration process. Within the dementia præcox group itself the catatonic cases have appeared, however, to hold a rather special position, as acknowledged by Kraepelin himself. In these cases the onset is apt to be more abrupt, the course more irregular, and the tendency to remissions greater than in the other forms of dementia præcox. Furthermore, the number of cases that may be looked upon as recovered is considerably higher than in the other types of dementia præcox. Kraepelin admits that about 13 per cent of his catatonic cases appear to recover, but he feels that the permanency of these recoveries is not yet settled, and inclines to the view that they are probably only remissions.' Other observers give widely varying opinions as to the prognosis in this group, some holding that no cases recover completely, others that 20 to 25 per cent recover. Wilmans, in a review of Kraepelin's own Heidelberg cases, comes to the conclusion that catatonic symptoms as evidence of a deterioration process were greatly overvalued, as the later histories of numerous cases have proven that recovery took place.'

The catatonic syndrome is not in any sense a clinical unit, and it is not to be doubted that under this designation cases have been brought together which have only a superficial resemblance. Very marked catatonic symptoms unquestionably occur in conditions

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other than dementia præcox. The clearly organic psychoses may give symptoms which resemble in a most striking manner the catatonic pictures seen in dementia præcox. We also know that very pronounced catatonic symptoms may occur in infective-exhaustive psychoses.[8] It is quite probable that deteriorating and non-deteriorating catatonic cases represent fundamentally different reaction types, but our knowledge of what these differences are remains very imperfect.

No satisfactory explanation has been found to account for the origin of these peculiar symptoms, and we know almost nothing of their deeper meaning and the mechanisms involved in their development. According to Kraepelin the negativism depends on a peculiar primary will disturbance leading to unexplained blocking of impulses or checking of them by contrary impulses. Bleuler, in a masterly analysis of negativistic phenomena, has shown the complicated nature of these manifestations and their dependence on a number of factors not considered in Kraepelin's hypothesis.[9] Psycho-analysis has not thrown much light on the genesis of catatonic symptoms. The most typical catatonic manifestation, the negativistic stupor, has the general characteristics of a defense reaction or of a protective mechanism, whereby the individual practically shuts out the external world.

On the other hand, we know that many forms of aversion cannot always be separated from catatonic negativism. Much so-called negativism is, when analyzed, found to be understandable as a more or less consciously assumed attitude toward an unpleasant emotional situation. We find states of obstinacy and irritability simulating negativism, and a hostile interpretation of the environment cannot be sharply differentiated from negativism, because a hostile attitude toward the outer world forms one of the roots of negativism. In cases where the sensorium is somewhat clouded, or when there is a great degree of perplexity or severe retardation, the behavior of the patient may appear markedly negativistic and make differentiation by means of symptoms alone quite impossible.

The clinical material used in the present study consists of 80 cases, most of which were observed on the service of Prof. Meyer at the Psychiatric Institute on Ward's Island. Some additional material has been drawn from the Manhattan State Hospital. We have, of course, excluded all organic cases, also the epileptic and

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hysterical cases. In order to define the group as sharply as possible only those cases have been included which showed a well-marked stupor with negativism, muscular tension and usually catalepsy, or exhibited states of excitement or depression accompanied by stereotypy of speech and action and usually impulsive behavior.

In interpreting the course and outcome we have not considered recovery established in any case unless it is shown that insight has been acquired, that energy and interests have not suffered, and that two years have elapsed since the psychosis subsided.

The cases studied have been divided into three groups, each of which will be briefly referred to:

(1) *Catatonic Psychoses Associated with Deterioration.*—We find in these cases that the appearance of a definite catatonic reaction, stupor or excitement, has been preceded, with very few exceptions, by symptoms indicative of a gradual change in the personality. Accurate anamneses show this so clearly ond consistently that it appears to us extremely doubtful if these deteriorating catatonic states ever set in abruptly without ominous prodromes. One must not overlook the fact that in many cases the actual period of transformation from the normal can be learned only from the patient, hence anamneses which give an account of an abrupt onset should be cautiously accepted unless corroborated by the patient.

As occupying a special position in this group one must mention the puerperal cases. Two patients in the series deteriorated after what appeared to be a sudden onset following childbirth—both were catatonic-like excitements from the first. Neither ever became accessible for examination.

(2) *Psychoses Essentially Catatonic Throughout,* but *Ending in Recovery.*—Most of the cases grouped here are catatonic stupors or depressions with catatonic behavior. In a number of cases the duration was two years or over, so that recovery came more or less as a surprise.

An instructive case was that of a married woman 31 years old. She was bright and smart; never considered peculiar. The onset of the psychosis was sudden, two days after the death of a three months old baby. For 5¼ years the patient showed in the hospital a very typical catatonic picture. There were mutism, general resistance against passive movement, muscular tension, fixed pos-

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tures, hands clenched, head flexed, chin on the chest, steady gazing and at times catalepsy. For several years the patient was regarded as a deteriorated catatonic. The clearing up was gradual with complaints that she felt dazed, that her memory was poor, her head dizzy. She convalesced steadily and was discharged as recovered 6¼ years after admission.

The retrospective account showed that the patient had little recollection for the stupor period, the lapse of memory beginning with the funeral of her baby and covering most of the succeeding six years. The patient left the hospital with complete insight, returned to her domestic duties and has been in all respects as bright and efficient as before the attack. She has borne two healthy children, and at the present time, five years after her release from the hospital, there is no reason to doubt her complete recovery.

In this case there was nothing in the patient's make-up or in the development of the psychosis to suggest deterioration, but the symptom-picture and the long duration led to an erroneous conclusion.

Analysis of the stuporous cases permits us to say that when the psychosis is expressed exclusively or chiefly in an acute stuporous reaction the prognosis is good. In the unfavorable cases the catatonic signs are in the beginning most often of the nature of odd behavior, grimacing and stereotypies followed by the gradual establishment of a stuporous condition with negativism and fixed postures.

(3) *Psychoses Presenting Besides Catatonic Symptoms Manic-Depressive Features.*—Many cases in this group were wrongly judged to be deteriorating types because of the over-valuation of catatonic manifestations. Of particular interest is the appearance in the same individual, at different times, of a clear manic-depressive symptom-picture and a typical catatonic syndrome. Many of our cases show that this occurs and it would appear that a very characteristic catatonic phase may replace the depression in a circular attack. A good example is the following case:

A bright and industrious girl of 18 developed a psychosis rapidly within three weeks before admission to the hospital. The patient was shocked by receiving a false report of her father's death. An excitement followed which was typically manic and lasted for a

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month, then the patient passed into a perfectly characteristic catatonic stupor. She was mute, refused food, kept her eyes closed; held saliva in her mouth, showed general resistance and muscular tension. The muscular rigidity was often extreme. The fingers were clenched and the lips puckered. By placing a hand under the back of her head the whole body could be raised from the bed while she rested rigidly on the heels alone. Peculiar behavior of various kinds was noted, *e. g.*, at times she would hold her breath until blue in the face, then finally expelling the air she would take in a breath with a loud gasp, repeating this for many hours.

The stupor lasted for six months; then rather abruptly a typical manic excitement again developed. The patient was then exalted, playful and erotic; flights, rhymes and sound associations were produced with extreme distractibility and marked restlessness. Having in mind the fact that the patient had shown such a pronounced catatonic phase, we scrutinized this excitement closely, but could see nothing in it suggestive of a catatonic disturbance. The patient was always in close contact with her environment, the activity was free and unrestrained, there were no signs of stereotypy in speech or behavior and nothing to suggest hallucinations.

This excitement lasted about two months; then the patient made a rapid recovery and was discharged with good insight about 11 months after the onset of the psychosis.

The review of the psychosis showed that the patient had a good memory for the period of stupor. She knew the names of all those who had attended her and recalled many minor incidents of that period. The only explanation for her negativistic behavior was that she was depressed over her rather unpleasant home life and wished to die. No hallucinations or delusions established retrospectively. After leaving the hospital the patient resumed her occupation and at present, 5½ years after discharge, she remains well.

Various other clinical types were observed among these recoverable cases. Retarded depressions with superimposed catatonic symptoms were usually looked upon as dementia præcox. Other cases showed a peculiar intermingling of symptoms corresponding to the so-called mixed manic-depressive conditions.

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To summarize the outstanding facts of our review of the catatonic group we may say that in a good many cases erroneous forecasts have been given, as proven by the subsequent history of the patients. From the point of view of formal symptomatology very similar clinical pictures occur in deteriorating and non-deteriorating forms. The most reliable prognostic data are gained from a study of the constitutional tendencies and the mode of development of the psychosis. When the anamnesis reveals a gradual change in the personality with indictions of that type of defective biological adaptation which we are coming to look upon more and more as the foundation for dementia præcox, then the prognosis is bad.

Acute stupors developing without characteristic prodromes have a good outlook, although the attack may be severe and of long duration. The puerperal catatonic reactions seem to occupy a special position, as some apparently acutely developing cases run an unfavorable course. We have also shown that catatonic syndromes appear in individuals who otherwise have typical manic-depressive attacks. In cases showing both phases the manic-depressive features carry the greater prognostic significance.

Kraepelin's work stands as one of the most important contributions in the history of psychiatry and few will deny the great value of the generalizations which led to the formation of the manic-depressive and dementia præcox groups. The contention, however, that we deal here with two entirely distinct diseases, always expressed in characteristic and distinguishable symptom pictures and having a definite course and termination, has become more and more untenable. By paying attention to factors which Kraepelin ignored or sacrificed to the disease process idea, a psychobiological interpretation of these disorders is found to be possible. This conception has led our interest away from the rigid symptomatological distinctions which in so many cases seems anyhow impossible to make; it teaches us to look for the deeper causes which lie back of symptoms, to study fundamental biological types of reaction, and to recognize the importance of mental events as forces of dynamic value in the psychoses. This conception also puts before us the possibility of modifying the dynamic factors in given cases, and above all it imposes upon us the necessity of considering these factors in our reasoning about prognosis, which must always be formulated for the individual case.

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ANATOMICAL BORDERLINE BETWEEN THE SO-CALLED SYPHILITIC AND METASYPHILITIC DISORDERS IN THE BRAIN AND SPINAL CORD.*

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In discussing the anatomical borderline between the so-called syphilitic and metasyphilitic disorders in the brain and spinal cord we take it for granted, on grounds of anamnesis, serum reactions, and postmortem findings, that without syphilis acquired or hereditary these so-called metasyphilitic disorders (general paralysis and tabes dorsalis) would not exist.[1]

Most of us probably would agree, and justly so, that general paralysis and cerebral syphilis, speaking broadly, form two separate and distinct anatomical groups. The histological differences between them have been repeatedly pointed out, especially by Alzheimer, Nissl, and others, but the close anatomical kinship existing between some of the syphilitic and so-called metasyphilitic processes has been little emphasized. This kinship is seen where the two anatomical pictures, usually distinct enough, approach each other; where histology begins to fail in the attempt to draw sharp lines, and where clinical differentiation is equally uncertain. Cases illustrating this anatomical borderland are not very numerous, but their significance seems to me to be large.

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[1] Histories in both the syphilitic and metasyphilitic cases may be negative concerning a primary infection, just as in undoubted tertiary syphilis there is frequently no history of any primary infection. The studies, especially of Mattauschek and Pilcz among officers in the Austrian army who had had syphilis, show that about 5 per cent of the latter developed general paralysis, and in many of those who became general paralytics the antecedent syphilis had been particularly mild, with slight or absent secondaries; in other words, in a less intelligent or less well-observed class of cases the signs of syphilis might easily have been overlooked. It would therefore be remarkable if one did not often fail to establish previous syphilitic infection in a late-appearing disease, such as general paralysis, especially as data from the patients themselves are notoriously untrustworthy.

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A review of the well-known forms of cerebral syphilis is hardly necessary. The gummatous form (by far the rarest in our experience) almost always shows, besides the gummata, the characteristics of the meningeal form, namely, a lymphoid and plasma cell meningitis and a syphilitic endarteritis. The vascular form shows in the foreground syphilitic endarteritis, accompanied as a rule by a more or less scattered and patchy meningitis. It is plain, therefore, that these three forms of cerebral syphilis shade into one another with no clear boundaries, meningitis and endarteritis—with few exceptions—being common to all (Plate VIII, Fig. 2).

In all these forms of cerebral syphilis, especially in the cerebral and cerebellar hemispheres, the inflammatory elements, which consist mainly of lymphoid cells and plasma cells, are either essentially confined to the membranes of the brain as a meningitis, or they may extend inwards by direct continuity for some distance along the adventitial sheaths of those blood vessels which enter the nervous tissues, especially in regions where cellular exudates are densest; but the cells of the deeper exudates, if such exist, are obviously due to extensions from the meninges, and these cells become rapidly fewer as one goes towards the deeper layers of the cortex; *i. e.*, exudates in the cortex, independent of those in the meninges, are seldom evident in the typical cases. If the meningitis is locally very intense the subjacent extensions into the cortex may be abundant, but the connection of the deeper exudate with that in the meninges is nevertheless still plain.

In the brain stem and spinal cord of cerebral syphilis, just as in the hemispheres, a meningitis with extensions inward is also the rule, but besides these extensions the deep-lying vessels usually show an exudate—as a rule a scanty one—apparently independent of that in the meninges; this is important, for this distribution of the exudate in the brain stem and spinal cord of brain syphilis seems not to differ essentially from that found in the brain stem and spinal cord of general paralysis as described later (see Plates I-III, which show a comparison of the two conditions in the lumbar and cervical region of the cord, and in the medulla oblongata respectively). This brief characterization *en masse* of the syphilitic group reveals therefore one striking resemblance between it and general paralysis as seen in the condition of the brain stem and spinal cord.

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The brain in general paralysis, as in cerebral syphilis, shows a meningitis, which, though usually richer in plasma cells, degenerative products, and general debris, may differ in no essentials from the syphilitic meningitis. The great distinguishing feature between the two disorders, as regards the exudate, is the fact that in the brain of typical general paralysis lymphoid and plasma cells are not limited to the meninges, and to extensions inward from these, as they are in cerebral syphilis, but these cells are also found independent of the meninges in the blood vessel sheaths in all layers of the cerebral cortex, marrow, brain stem and spinal cord (Plate V, Fig. 1).

The anatomical collection of the Psychiatric Institute contains over one hundred and seventy cases of general paralysis; six or seven of these cases, usually those of long duration, have been included in the paralytic group with some hesitation, as the anatomical picture of general paralysis was not entirely typical; lymphoid and plasma cells were, as a rule, scanty in the meninges of these cases, even scantier in the depths of the cortex, though still unquestionably present, and apparently independent of the meninges. To these cases (see more particularly Cases II and III below) I would call special attention, because of their close anatomical resemblance to certain cases of cerebral syphilis of meningeal type which follow.

The syphilitic cases referred to belong to a group in which mental and physical symptoms often (but not always) appear many years after the original infection. In the New York State Hospitals, from which our material comes, this is a large and important group. As a group I think it is not referred to in the literature, though isolated cases are often met with. No clear clinical picture can yet be made; diagnoses have varied from brain tumor, epilepsy, and arteriosclerosis, to general paralysis. It is especially within this group of late-appearing brain syphilis that an organic type of reaction, with memory defects and deterioration, often comes on, resembling general paralysis so closely that the elect are in doubt, if not actually deceived; in other words, it seems impossible during the life of certain of these cases to determine clinically whether they are general paralysis or cerebral syphilis, even with the aid of the Wassermann reaction.

The interval between infection and the outbreak of mental symptoms is not always free in these syphilitic cases, though it

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may be free. Transient or more permanent palsies of the eye muscles or of other muscles, or apoplectiform attacks, may have occurred from time to time in the interval, thus giving intermittent hints of a syphilitic process which is not quiescent. In general paralysis likewise—but much more rarely—similar episodic attacks may appear in the interval between infection and the mental outbreak. The following three cases, all believed to be general paralysis, illustrate in part the difficulties of clinical diagnosis, and to some extent the difficulties of anatomical diagnosis, and all show apoplectiform attacks.[2]

CASE I (No. 669).—The patient, F. V., a Swedish elevator man, 40 at death, came to autopsy from the Institute service of the Manhattan State Hospital April 4, 1911. He seemed normal until the age of 34, when, after a syphilitic infection ten months previously, he had a sudden right hemiplegia, with inability to move the arm especially. The hemiplegia largely cleared up in about a month under mercury and iodides, so that he again worked for four years, but even at the end of that time he had as residuals, slight right-sided weakness, spasticity and dragging of the right foot, increased reflexes, especially on the right, right ankle clonus, and usually a right Babinski-sign. The weakness disappeared; the other residuals persisted until death. The pupils were at all times unequal, the right being the larger; they reacted poorly to light, but promptly to accommodation.

About four months before admission he left his job, could not find another, then became depressed, talked of suicide, and was committed to the hospital. At first he rapidly improved, his depression disappeared and he became mildly elated. His spontaneous speech was good; in test phrases it was at first recorded as sticking, slurring and drawling, but later it was correct, even in tests. Writing, memory and retention were good. Two and a half months after admission he was paroled in charge of a friend, and after working for a time, during which he felt well and showed no memory defects or other trouble, he suddenly had a convulsion, with unconsciousness for two or more days, and was readmitted, about thirteen months before death, in a peculiar,

[2] It has been found practically impossible to give due credit by name to the various physicians who have collected the clinical data in the cases cited, consequently only the hospitals from which the cases came are credited.

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aggressive, flippant, mixed-up condition. At this time his answers were so foolish and his realization of his surroundings was apparently so good that for a while he was suspected of malingering. A month later he was contradictory and inconsistent about dates and events. He asked the same questions over and over and seemed to have absolutely no retention. Memory at first was quite untrustworthy for all events; later he gave a fair account of the first twenty years of his life, but was completely mixed up concerning the last twenty years. Speech was thick and very monotonous, but his words were not actually distorted. His personality was considered to be well preserved, but he had little insight. Several lumbar punctures showed positive cell counts, and there was a Wassermann reaction in both the blood serum and spinal fluid. Death occurred after a series of convulsions. The clinical diagnosis was cerebral syphilis.

Post mortem an exceptionally mild grade of general paralysis, so considered, was found pretty generally distributed in the cortex of both cerebral hemispheres; in places the changes were so slight as hardly to be recognizable, but in the lower left parietal region, in the central operculum, and in the anterior two-thirds or more of the left temporal lobe there was an abrupt change—without any surface indications to suggest it—to one of the most intense, deep-seated inflammatory processes in our collection. Here both the pia and the cortical vessels became suddenly densely infiltrated according to the paradigm of general paralysis, the cortical infiltrate seeming not to depend for its presence on that in the pia; disorganization and destruction of the cortex were in places essentially complete, and the exudate not infrequently was found outside of the vessel sheaths. The only other area showing such extensive changes was a narrow strip in the right hippocampal region. See Plate IV, Fig. 1, which shows the condition in the left frontal region as compared with Fig. 2, which is from the temporal lobe. The anterior half of the left temporal lobe was decidedly atrophic, but the left hemisphere, as a whole, weighed only thirteen grams less than the right.

This case, while not wholly clear anatomically, shows not only the difficulty in clinical diagnosis, but also a patchy focalized type of reaction—probably general paralysis—distributed in those parts of the brain which are specially prone, as described later, to

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show the more unusual types of syphilitic reaction seen in the so-called borderline cases. The case, in the abrupt, intense and patchy character of the exudate, and in the localization of the specially affected areas, was quite different from ordinary focalized cases of general paralysis, a number of which are contained in our collection. A softening in the left crus cerebri explained the right hemiplegia.

CASE II (No. 673).—J. G., aged 47, was a patient who came to autopsy from the Institute service of the Manhattan State Hospital May 29, 1911, with a doubtful clinical diagnosis. At first he was considered general paralysis, later cerebral syphilis. He probably had had syphilis, but the date was uncertain; he put it near the time of admission, ten years before death, but this seemed unlikely, as at that time he already had Argyll Robertson pupils, diminished knee jerks, and a slightly tabetic gait. For a year after admission he was mildly elated, grandiose, and without insight; afterwards he grew quieter, had a good memory and good insight, but after some depression he again grew megalomanic. He had had transitory left-sided paralyses from time to time, but five years before death he had a permanent left hemiplegia, with flattening of the left face, spasticity of the left arm and leg, but good power, exaggeration of all tendon reflexes, left hemianopsia and left hemianæsthesia; there were left-sided convulsive attacks, with clear mentality immediately afterwards; these attacks recurred until death. Speech was mostly correct except for slight tremor, but his writing showed typical distortion, *e. g.*, mthosit for methodist. Lumbar puncture showed marked lymphocytosis. He was usually mildly elated during the last years of his life; his memory was excellent, as well as his orientation and grasp on his surroundings, but he had a few hypochondriacal delusions that he clung to. About a year before death there was a marked spinal lymphocytosis, and a positive Wassermann reaction in the blood serum, but not in the spinal fluid. Left hemiplegia was still well marked, with athetoid movements of the left hand, a left Babinski-sign and left astereognosis and ataxia. He died the day after a left-sided convulsion, of hemorrhages in the brain stem (pons region).

At autopsy the right cerebral hemisphere was blood-stained as a result of hemorrhagic pachymeningitis; it was about half as large as the left. Very slight but characteristic changes of gen-

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eral paralysis were found, of nearly the same degree as regards infiltrate, in the two hemispheres, but rather more cell loss and disorder in the cortex was noted on the right. The tabetic changes in the spinal cord were somewhat slight; the left pyramidal system was much thinned out, the right looked normal. See Plate VII, Fig. 1, which shows a prefrontal section from this slightly marked case of general paralysis of long duration; compare with Fig. 2, which is from the gyrus rectus of a case of cerebral syphilis.

CASE III (No. 230).—The material, together with a clinical abstract, was received from the Middletown State Homeopathic Hospital in February, 1907. The patient, M. O., a woman, 37 years old on admission, had a psychosis which began abruptly with acute delirious features; these changed later to a symptom complex believed to indicate general paralysis, and the disease ran its course in twenty-three years. No history of syphilis was obtained. At first she had various hallucinations and was quite expansive. Her pupils were said not to react to light in the beginning; later they reacted sluggishly. The more acute symptoms improved and she had some insight, but her memory was evidently defective. At the age of 40 transitory left facial paralysis and ptosis of one lid were recorded; her hands trembled, her voice was shaky, and she could not repeat test phrases; she seemed much demented, but she was still expansive and had "wash-tubs and safes full of diamonds." As time went on she had various paralyses, which apparently cleared up for the most part. She varied from a good-natured condition to a violent, fighting mood, but remained expansive. Deterioration was progressive and marked; she finally became a bed patient, so demented that little that she produced could be understood except profanity. About a year before death the pupils were unequal and did not react; lumbar puncture showed fifteen to twenty lymphocytes "per field." She had one convulsion about this time, the only one mentioned in the record. Examination of the brain showed widespread, but extraordinarily slight infiltration, consisting of lymphoid and plasma cells in the pia mater, and especially slight infiltration about the cortical blood vessels. The process in the pia was usually more pronounced than in the cortex, resembling in this respect syphilis more than general paralysis. The blood

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vessels showed atheromatous changes, but nothing clearly indicative of syphilis. See Plate VI, Fig. 1, which is a photograph from the orbital cortex of this case; compare Fig. 2, from the orbital cortex (gyrus rectus) of a case of cerebral syphilis.

Other evidences of kinship in the two groups are seen in their behavior towards antisyphilitic treatment. General paralysis until recently has been so little influenced by therapeutic agents as to be held by some to be unaffected. We know much less about the effect of specific remedies in cerebral syphilis; in some of the fresh cases the results have been excellent, but as far as we know the older cases are nearly as resistant as general paralysis. Experience, combined with experiments, has shown that in healthy individuals even the most diffusible drugs, when introduced directly into the circulation, enter the brain substance and cerebrospinal fluid only in the slightest traces, if at all, the walls of the cerebral blood vessels apparently forming an effective barrier; this barrier is found to be weakened if the blood-vessel walls are diseased, and it is perhaps the result of different grades of vascular disease that in some cases of cerebral syphilis remedies in effective amounts can pass through, while in other cases they cannot.

Post mortem, in a few of the cases which we have called cerebral syphilis, the problem of diagnosis may be nearly as difficult as during life, for not only in the brain stem and spinal cord, as we have seen, may the changes of general paralysis and cerebral syphilis almost exactly match, but certain regions of the brain, such as the gyrus rectus, or sometimes the temporal lobes, may show a picture under the microscope which reproduces to the life a type of very mild general paralysis, such as was spoken of in the cases of long duration. The cases most difficult to interpret present not only a scattered or patchy exudate of lymphoid cells, and practically always plasma cells, in the meninges of the brain (especially in the gyrus rectus or temporal lobes as already stated), but in the same regions the exudate is also found apparently independently in the vessel sheaths of the cortex. Even in the small vessels which lie deep, and remote from any apparent connection with the meninges, we find, as in mild general paralysis, a few lymphoid cells, occasionally a plasma cell or a mast cell. In these cases the obliterative endarteritis, which regularly belongs with the syphilitic group, is seldom absent and might settle

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the difficulty of differentiation, but, unfortunately for diagnosis, such an endarteritis is found at times in unquestioned general paralysis (Plate VIII, Fig. 1)—perhaps as a residual of previous syphilis—and was present in some of the six or seven mild cases already referred to which were believed to be general paralysis. Little help in differentiation can be expected from an examination for spirochætes in the syphilitic group; they have been found very rarely in the gummatous form, and in the endarteritic-meningeal group there are a few positive cases, but the findings are too rare to be of practical diagnostic value.

Strassman, in 1910, found in a man of 26, infected with syphilis in India, who died one year and nine months later with marked gummatous meningo-myelitis and encephalitis, spirochætes in the blood-vessel walls and in the nervous tissues of the brain and spinal cord; this he claims is the first demonstration of spirochætes in the brain and cord of an adult with acquired syphilis.

In the same year (Jan. 30, 1910) a man of 47, with gummatous cerebral syphilis, whose primary infection had occurred about five months before death, came to autopsy in the Manhattan State Hospital, from the service of the Psychiatric Institute; numerous spirochætes were found by Professor James Ewing, of Cornell University, in the gummatous tissue taken from one sylvian fossa of this case (Plate X, Fig. 2); elsewhere, in specimens studied by the writer, they were very few. See "Report of Director of Psychiatric Institute" for 1909-10, pages 43 and 74.

In the cases which follow, V and VI present, in brief abstract, cases considered to be cerebral syphilis, but they showed in places an anatomical picture more closely resembling general paralysis than syphilis. Case IV is an ordinary illustration of cerebral syphilis of meningeal and vascular type.

Case IV (No. 771).—The material was received, with a clinical abstract, from the St. Lawrence State Hospital in November, 1912. The patient, F. B., was 43; no history of syphilis was obtained. About a year before death he fell against the moulding of his room and was thought to have fractured his skull, but he took a railroad journey immediately afterwards; he had considerable pain in his head at the time, but went at hard work as manager of a typewriter office six weeks after the accident. Later

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in the year he had severe headaches and stopped work, but his "mind seemed all right." About three months before death he woke up aphasic, and continued thus until death, presenting the symptoms of a marked so-called sensory aphasia. Examination of general sensory and motor functions on admission was quite negative, except that the knee-jerks were not obtained, while the elbow and wrist reflexes were exaggerated; the pupils were normal. His memory, grasp of the situation, and insight were not clearly determined, owing to the aphasia. Three weeks before death a left-sided stroke occurred, affecting only the arm and face; he never recovered from this. There is no record of lumbar puncture or Wassermann test. The diagnosis was cerebral syphilis and focal softening, but whether this diagnosis was made antemortem or postmortem is not clear. The left temporal lobe was found extensively softened. Typical changes of cerebral syphilis were found in the meninges and in the blood vessels. See Plate V, Fig. 2, and Plate VIII, Fig. 2. The exudates in the cortex of this case looked for the most part like extensions from the exudate in the pia mater.

Case V (No. 714).—Received, together with a clinical abstract, from the Hudson River State Hospital. The patient, J. B., aged 45, had been an efficient butler; no history of syphilis was obtainable. He began about a year before death to complain of voices calling him—the devil was in the walls of his room; a girl from hell kept calling to him for help. He became depressed and poorly oriented. On admission his speech was slurring on test phrases; the pupils and knee jerks were active; later his body was held rigid most of the time, and his legs were spastic. Spinal puncture showed 60 to 150 cells per oil immersion field; no record of a Wassermann test is at hand. He died after numerous convulsions. The clinical diagnosis was cerebral syphilis. The microscope showed in most of the cerebral convexity only a scattered exudate in the pia, with very little change in the cortex, but in the gyrus rectus and left temporal lobe well marked meningitis was present, with not only extensions into the cortex, but also in places a picture of deep-seated reaction strongly resembling general paralysis. In many of the large blood vessels there was a marked girdling endarteritis, and a massive infiltrate in the adventitia. See Plate IX for a section of a vessel wall from this

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case; also see Plate VI, Fig. 2, and Plate VII, Fig. 2, for examples of deep-seated exudates, as seen in the gyrus rectus of this case, and compare with these syphilitic sections the sections of mild general paralysis placed alongside.

CASE VI (No. 569).—The material and the clinical abstract were received from the Hudson River State Hospital. (For further details see "Report of Director of Psychiatric Institute" for 1909-10, p. 97.) The patient, I. D. C., was 54 years old at death. He had had syphilis at 39, and a transitory left-sided stroke at 43. His psychosis began about two years later, when he became restless, forgetful, erotic and untidy. His pupils were contracted and sluggish; there were facial tremors, but no speech defect; the reflexes were exaggerated; the gait unsteady. Memory retention, insight and judgment were all defective. The cerebral blood vessels were typically syphilitic, and small foci of softening were found in the basal nuclei. Lymphoid and plasma cells were found in the pia mater of the brain, and—especially in the basal parts—local exudates were present in the deep cortex that did not seem to be explained by extensions from the pia. The medulla oblongata and spinal cord showed a distribution of exudate, such as is usual in the syphilitic cases. See Plate II, Fig. 2, taken from the upper cervical cord of this case; compare with Fig. 1, which is a specimen from the cervical cord of a case of undoubted general paralysis, as shown in Plate V, Fig. 1.

In the face of this evidence, not only in the brain stem and spinal cord of cerebral syphilis, but in the cerebral hemispheres as well, one begins to wonder whether this somewhat regional, deep-seated inflammatory process, apparently disconnected with that in the meninges, and resembling that seen in the slighter cases of general paralysis, is in any *essential* way different from true general paralysis. In cases which we have called general paralysis of long duration hardly more exudate—sometimes decidedly less—is found in the depths of the cortex than in these cases which we have called syphilitic. On the unessential detail of the simple amount of an exudate no differential diagnosis should be based. One asks, Are the exudates essentially different in kind? and we can only say that from case to case they do differ, but mainly in the relative number of plasma cells, not in essentials; and we may also say that from the primary sore through the secondary

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tertiary, and what we have called the metasyphilitic lesions essentially the same kind of cellular exudate meets us.

If the exudates in these cases of syphilis and general paralysis do not essentially differ in kind, does their difference in distribution justify the formation of separate groups of diseases? Ordinarily, and for practical purposes of grouping, yes; but in these borderland cases the pictures of general paralysis and cerebral syphilis become so nearly the counterparts of each other that we can hardly speak of any essential difference in distribution. The two processes look alike; they run together both anatomically and clinically; we hesitate in which group to place the case, and finally end, if forced to classify, by letting a syphilitic endarteritis or other contributory evidence decide the point. In other words, there is nothing very fundamental in all these fine distinctions about just where an exudate must be, and the conviction grows—anatomically speaking—that in certain cases our groups—ordinarily distinct—come together and fuse, and that we are dealing only with different varieties of the same thing.

Certain authors, for example Sträussler, who described what he considered to be gummata in general paralysis, have insisted that syphilis and general paralysis may coexist in the same case. If the two groups have a common cause we would expect the characteristics of one group to appear occasionally in the other. Typical syphilitic endarteritis, for example, as already stated, occasionally is found in equally typical general paralysis, probably most often as a residual of previous syphilis; and cases which we call cerebral syphilis, as we have seen, may present in places an apparently independent cortical exudate more characteristic of general paralysis.

We have thus far spoken exclusively of the cellular exudate; it is of course not the disease, but it is practically sufficient for diagnosis and differentiation, and is the clearest, most usable expression we have of the reaction to the virus which sets the disease agoing. The other and older data of diagnosis, such as degeneration of superficial or deeper-lying nerve fibers, degeneration and thinning of the rest of the nervous parenchyma with neuroglia increase, are still important, vastly more important, of course, functionally speaking, than the exudates, but the exudates are by far the safest index of activity in the borderline cases, where

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evidence of loss of nervous tissue is not always plain and needs further study.

The writer has never been able to see a very fundamental importance in the discussion as to whether in general paralysis the so-called inflammatory process, or the degenerative process affecting the parenchyma, is the primary thing; that the changes in both the parenchymatous and vascular tissues go hand in hand as an expression of the injury wrought by the causative agent, and that neither strictly deserves the designation of "primary" appears most probable. While this seems true, it is likely that the parenchyma, being the more vulnerable part, suffers first in the attack.

In cerebral syphilis, on the other hand—omitting the borderland cases—the distribution of this causative agent would appear to be much more restricted than in general paralysis; this restriction is expressed by the relative lack, in cerebral syphilis, of any clear reaction in the parenchymatous parts of the hemispheres, while in the meninges, or in the intima of certain blood vessels, or in both, the reaction is plain.

Tabes—a so-called metasyphilitic process—which not infrequently shows, in the spinal pia and blood vessels, a typical lymphoid and plasma cell exudate, also forms an interesting link between general paralysis and the late forms of syphilitic meningitis, and serves to strengthen the belief that no real borderline exists between them. If cerebral symptoms appear in a case beginning as tabes we may find postmortem a reaction in the brain either of the type of general paralysis or of the syphilitic type, as above described; thus all psychoses rising on the ground of tabes are not general paralysis, and the exudative changes in the brain, whether they take on the type of general paralysis or that of syphilitic meningitis, are best understood, not as the introduction into the brain of another disease foreign to the tabetic process, but rather as an enlargement of the field of action of the same agent which produced the tabes. If this view is correct, general paralysis and cerebral syphilis, when arising on the ground of a tabes, would have a common etiology, differing only in their distribution.

The following case, briefly abstracted, may serve as an example of the development of cerebral syphilis in a tabetic setting. For further details see Rev. of Neurology and Psychiatry, Vol. IX, p. 538, where the case is reported by Dr. D. K. Henderson.

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CASE VI (No. 727).—The patient, J. P., a mason, aged 49 at death, came to autopsy from the Institute service of the Manhattan State Hospital January 14, 1912. He had had syphilis, but the date was unknown. About two years before death he showed tabetic signs and failing vision, and a diagnosis of locomotor ataxia was made. Soon after this he became depressed and suicidal and was committed for this reason. Speech and memory were not affected; he had no delusions, and had considerable insight. The spinal fluid showed only six cells per cubic millimeter; Noguchi's modification of the Wassermann test was negative in both the spinal fluid and blood serum. A syphilitic meningitis, especially basal, was found in the brain; also in the medulla oblongata and spinal cord. Tabetic changes were fairly marked in the cord; extensive pyramidal tract degenerations were also present. The patient was bedridden, and his legs were very weak, but more definite symptoms from the pyramidal degenerations seem not to have been noticed. See Plate III, Fig. 2, which shows a deep exudate about the blood vessels in the medulla oblongata of this case; compare Fig. 1, from the medulla oblongata of a case of undoubted general paralysis, with unusually marked changes in this region.

The conclusion previously reached by a study of the borderline cases, that the syphilitic and metasyphilitic disorders probably were only different modes of expression of the same cause, has lately been reinforced by the discovery of Drs. Noguchi and Moore of the Treponema pallidum in twelve out of seventy cases of general paralysis. Spirochætes therefore (presumably the same) have now been found in both the syphilitic and "metasyphilitic" groups. What determines the presence and the distribution of these organisms in the nervous system we do not know. It seems probable that they enter by way of the blood as certain bacteria do. These bacteria set up sometimes an acute meningitis essentially limited (like that of brain syphilis) to the meninges; sometimes they set up a deeper process, in which the exudate is distributed (more as in general paralysis) throughout the deeper parts of the cortex, as well as in the meninges. I do not mean to say that the spirochætes are distributed in the same way as these bacteria, for we know as yet very little about their distribution, but an analogy is at least suggested. The

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evidence furnished by Dr. Moore's specimens, showing spirochætes in general paralysis, tends to show that in that disease the organisms usually lie scattered through the nervous tissue, and not in the meninges or in the vessel walls (Plate X, Fig. 1). Such a position of the spirochætes fits in perfectly with the more generalized spread of the cellular reaction in general paralysis, as well as with the more generalized decay of nervous tissues seen in that disorder; while in cerebral syphilis the presence of spirochætes in meningeal gummata, and in and around the walls of blood vessels, fits in well with the approximate limitation of the reaction in that disease to the meningeal tissues, and with the slighter loss of nervous parenchyma as compared with the ordinary case of general paralysis.

Summary and Conclusions.

To me the most helpful viewpoint, and the one which seems most in accord with the anatomical facts, is to regard the syphilitic and so-called metasyphilitic disorders as usually distinct varieties of the same general process.

This viewpoint is based on the following facts:

In the brain stem and spinal cord of both groups the character of the exudate and its distribution are much the same.

In the cerebral hemispheres, on the other hand, while the exudate in the two groups is the same in kind, it usually differs in distribution; the syphilitic exudate being essentially in the meninges, the metasyphilitic being more especially in the cortex as well as in the meninges, but borderline cases exist which anatomically may be interpreted as either syphilitic or metasyphilitic and point to a fundamental similarity.

Furthermore, signs of combination are seen in the rare coexistence of gummata, or less rarely of syphilitic endarteritis, with so-called metasyphilis, *i. e.*, general paralysis.

In cases beginning as tabes, when mental symptoms appear, the brain may show the changes either of cerebral syphilis or of general paralysis, again suggesting a common origin.

The serum reactions in the two groups also point to a common etiology.

Finally, with the discovery of the treponema pallidum in general syphilis, in brain syphilis, and in the so-called metasyphilitic

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conditions (general paralysis, etc.), we can hardly avoid the conclusion, already arrived at before this discovery, that the groups had best be regarded as different forms of syphilitic reaction, but not as essentially different processes.

Our viewpoint in no way lessens the importance of these different groups, or the desirability of keeping them separate, but it brings them, for purposes of study, into what seem to be their natural relationships.

DESCRIPTION OF PLATES.

Plate I.—A comparison of the changes seen in the lumbar region of the spinal cord in general paralysis (Fig. 1), and in cerebral syphilis (Fig. 2).

FIG. 1.—Lumbar cord; photograph from a case of plain general paralysis. Note the infiltrate in the pia mater, and about the blood vessels of the deeper parts.

Fig. 2.—Lumbar cord; photograph from a case of cerebral syphilis; the same features are shown as in Fig. 1, but the deep infiltrate is slighter.

Plate II.—A comparison of general paralysis (Fig. 1), and cerebral syphilis (Fig. 2), as seen in the upper cervical region of the spinal cord.

Fig. 1.—Cervical cord; photograph from a well-marked case of general paralysis; the deep-lying perivascular exudate seems to be independent of that in the meninges.

Fig. 2.—Cervical cord; photograph from a case of cerebral syphilis, Case VI, showing infiltration of the pia and of the superficial and deep-lying blood vessels.

Plate III.—A comparison of general paralysis (Fig. 1), and cerebral syphilis (Fig. 2), as seen in the medulla oblongata.

Fig. 1.—Medulla oblongata; photograph from a well-marked case of general paralysis; the amount of deep infiltrate is unusually great for this region.

Fig. 2.—Medulla oblongata; photograph from a case of cerebral syphilis which developed after tabes, Case VII. The superficial and deep infiltrates are plain.

Plate IV.—Local variations in exudate seen in the same case (Case I), which was considered to be general paralysis; mild changes (Fig. 1), intense changes (Fig. 2).

Fig. 1.—Photograph from the left frontal region, showing very slight changes.

Fig. 2.—Photograph from the left temporal lobe, showing intense superficial and deep changes.

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Plate V.—A comparison of typical general paralysis (Fig. 1), with typical cerebral syphilis of meningeal and vascular type (Fig. 2).

Fig. 1.—Photograph from the orbital cortex of plain general paralysis. Note the cellular exudate in the pia mater with extensions downward along the vessels; also the deeper process, apparently not the result of extension from the pia.

Fig. 2.—Photograph from the gyrus rectus (orbital surface) of Case IV, showing well-marked syphilitic meningitis, with some extensions along vessels which enter the cortex; little change in the deeper vessels. See Plate VIII, Fig. 2, for the blood vessels of this case.

Plate VI.—A comparison of very mild general paralysis of long duration (Fig. 1), with cerebral syphilis (Fig. 2).

Fig. 1.—Photograph from the orbital cortex of Case III, which was considered general paralysis of long duration. There is a fair exudate in the pia; in the cortex it is very scanty.

Fig. 2.—Photograph from the orbital cortex (gyrus rectus) of Case V, cerebral syphilis. This case showed considerable extension of the exudate from the pia into the cortex and, regionally, a deeper seated exudate resembling closely that of general paralysis. See Plate VII, Fig. 2, for an even more striking example from this same case; also Plate IX, which is a photograph of the wall of a blood vessel from this case.

Plate VII.—A comparison of mild general paralysis of long duration (Fig. 1), with cerebral spyhilis (Fig. 2).

Fig. 1.—Photograph from a section of the prefrontal cortex of Case II; mild general paralysis of long duration. Parenchymatous loss is not at all striking, but there is some disorder in the cortex, and very slight cellular infiltration. The pia contains rather little infiltrate.

Fig. 2.—Photograph from a section of the gyrus rectus of Case V; cerebral syphilis. The cellular exudates in the pia mater and in the deeper layers of the cortex appear to be independent of each other, as in general paralysis.

Plate VIII.—A comparison of syphilitic endarteritis as occasionally found in general paralysis (Fig. 1), with syphilitic endarteritis in cerebral syphilis (Fig. 2).

Fig. 1.—Photograph of a syphilitic artery in cross-section from a case of typical general paralysis. Note the well-organized ring of thickened intimal tissue, the cellular infiltration of the adventitia, and the intact membrana elastica.

Fig. 2.—Photograph of arteries, and part of the outer layer of the cortex, from Case IV, which is an ordinary case of syphilitic meningitis and endarteritis. In the largest vessel cellular infiltration of the adventitia and thickening of the intima are well shown. The membrana elastica is preserved.

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Plate IX.—Photograph of a cross-section through the walls of a cerebral artery from Case V, a case of cerebral syphilis, which showed local features resembling general paralysis. Note, at the top of the plate, the massive cellular infiltration of the adventitia; the serpentine band of elastica about the middle of the plate, and the much thickened and somewhat infiltrated intimal layer occupying the lower half of the plate.

Plate X.—Spirochætes in general paralysis (Fig. 1). Spirochætes in cerebral syphilis (Fig. 2).

Fig. 1.—Photograph of spirochætes from the outer cortical layers in a case of general paralysis; made from a slide stained and presented to the writer by Dr. J. W. Moore, of Central Islip State Hospital.

Fig. 2.—Photograph of spirochætes from gummatous tissue in the sylvian fossa of a case of gummatous cerebral syphilis of short duration (the case is referred to in the text). The photographs were made from a specimen stained by Professor James Ewing, of Cornell University.

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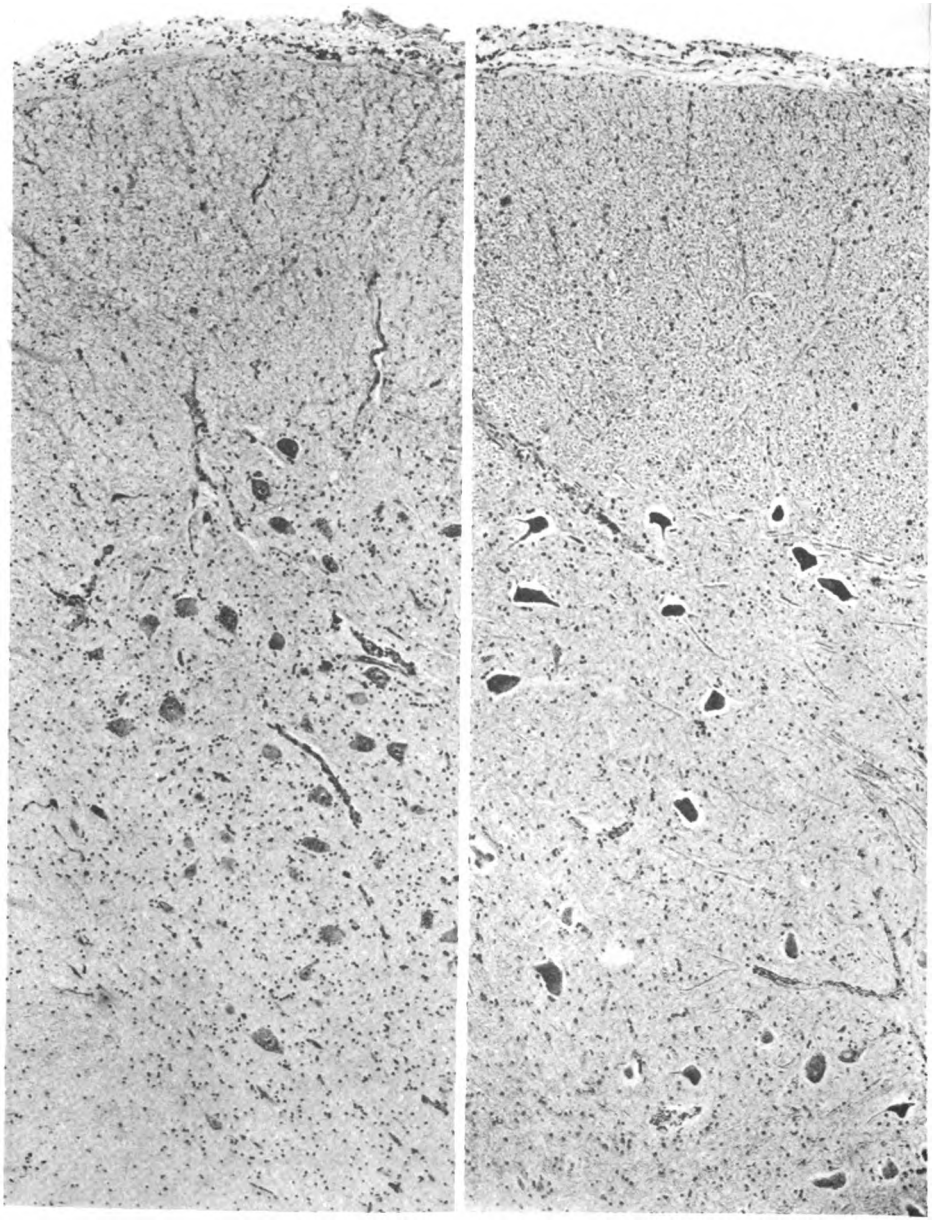

FIG. 1. FIG. 2.

PLATE I.

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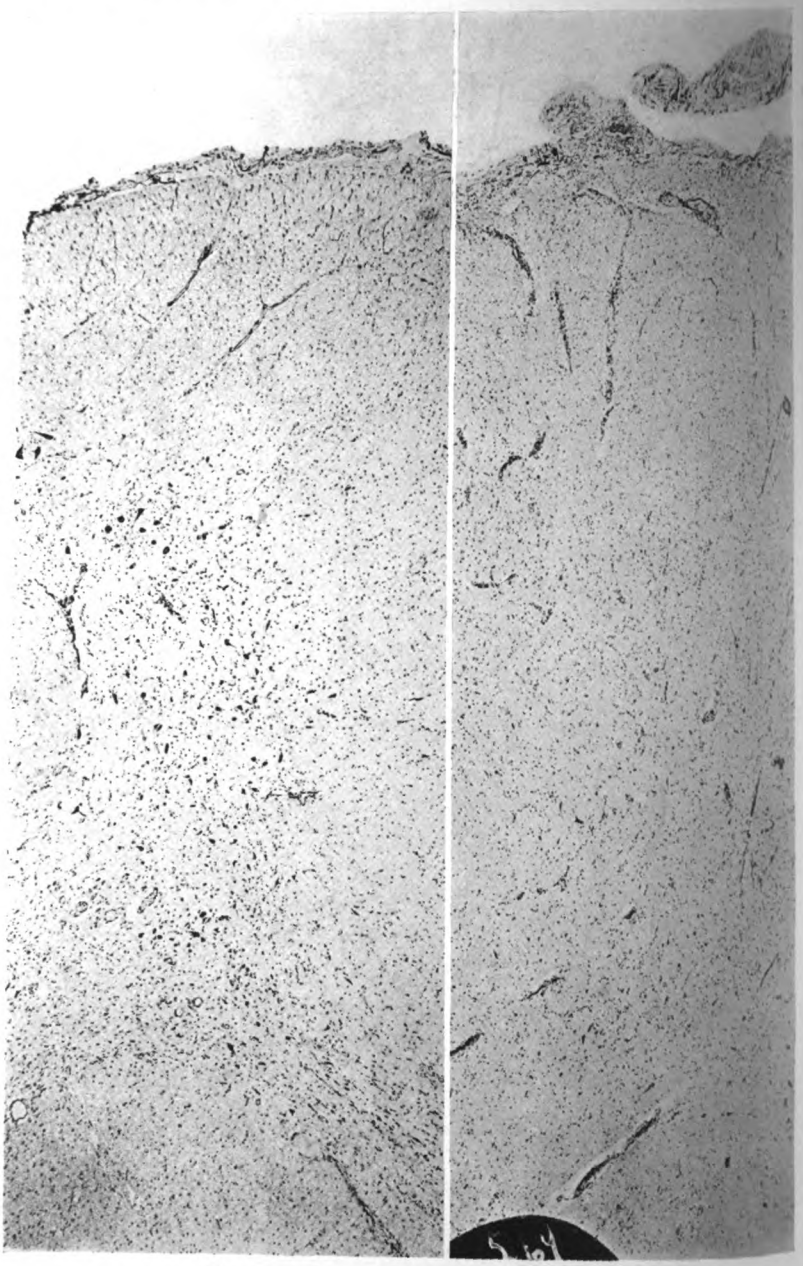

FIG. 1. FIG. 2.

PLATE II.

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FIG. 1. FIG. 2.

PLATE III.

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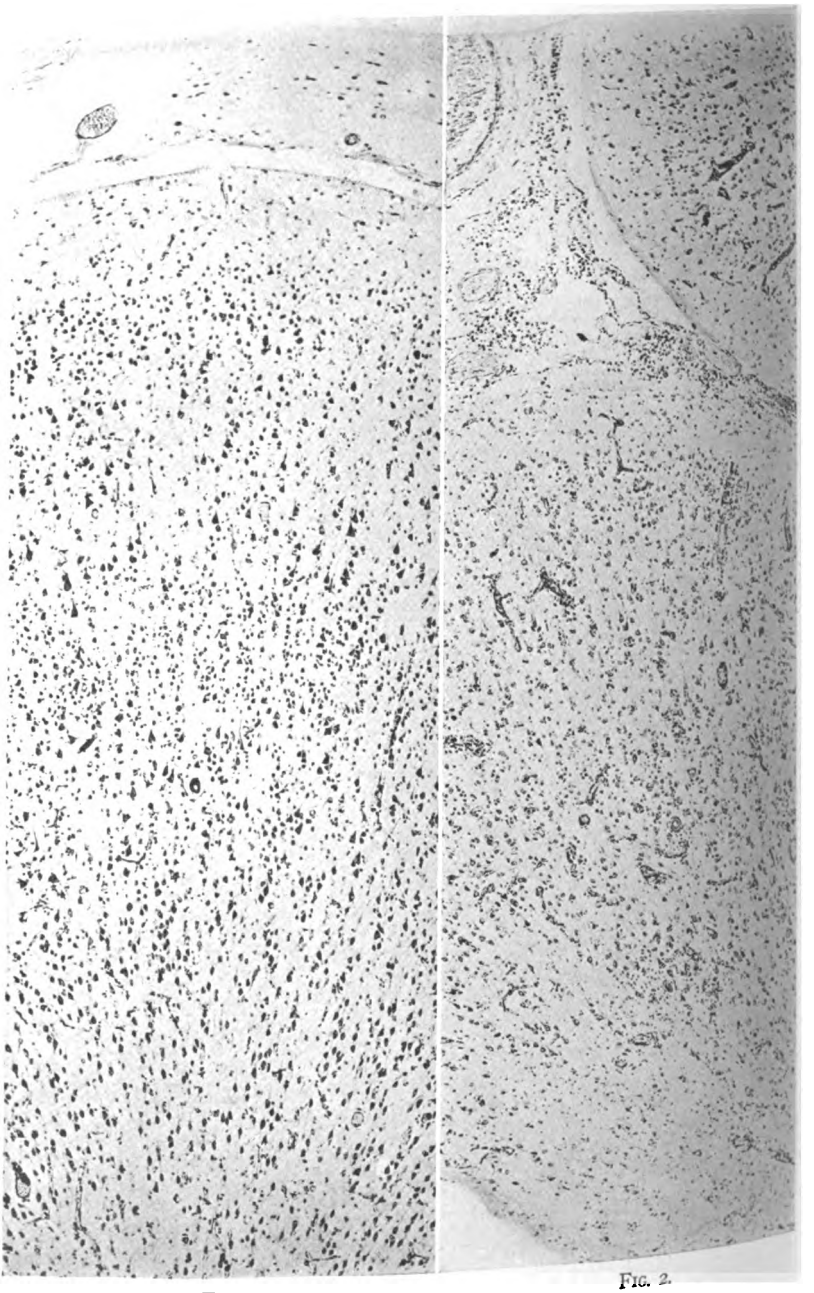

FIG. 1. FIG. 2.

PLATE IV.

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FIG. 1. FIG. 2.

PLATE V.

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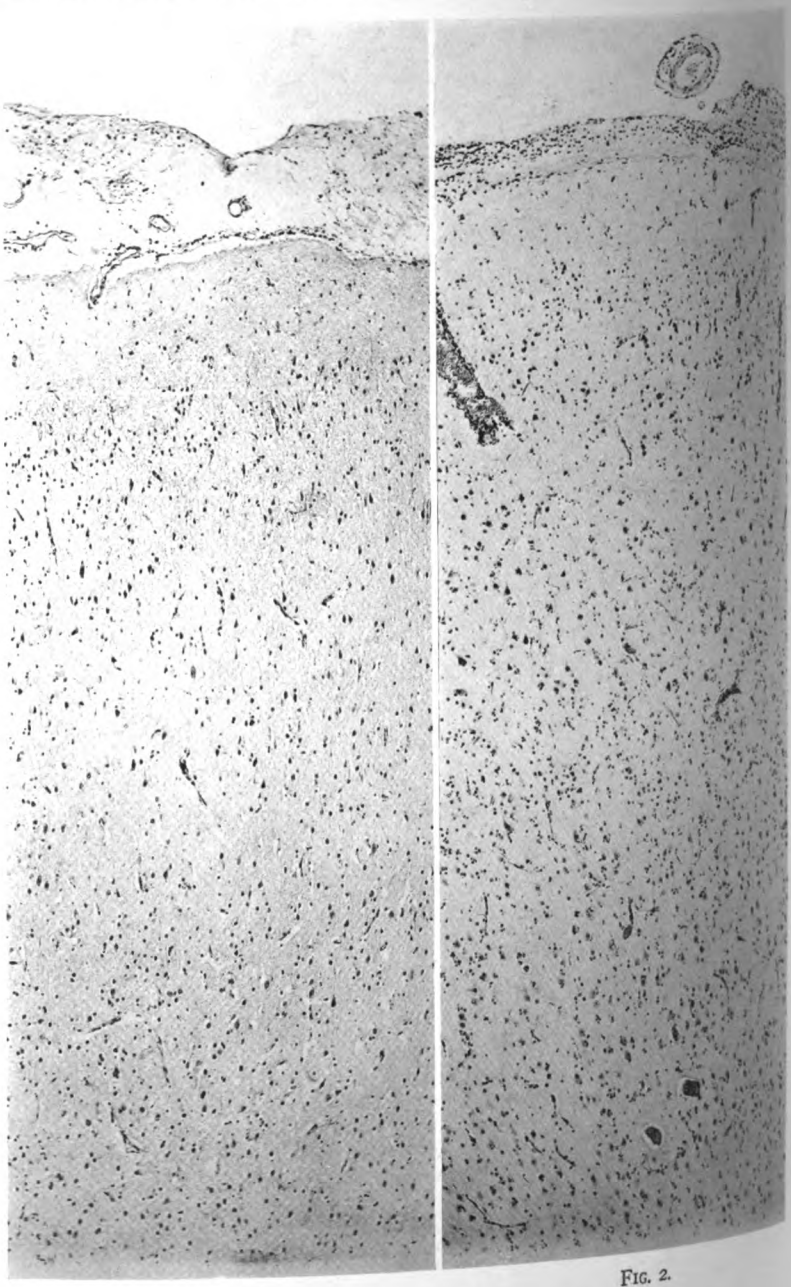

FIG. 1. FIG. 2.

PLATE VI.

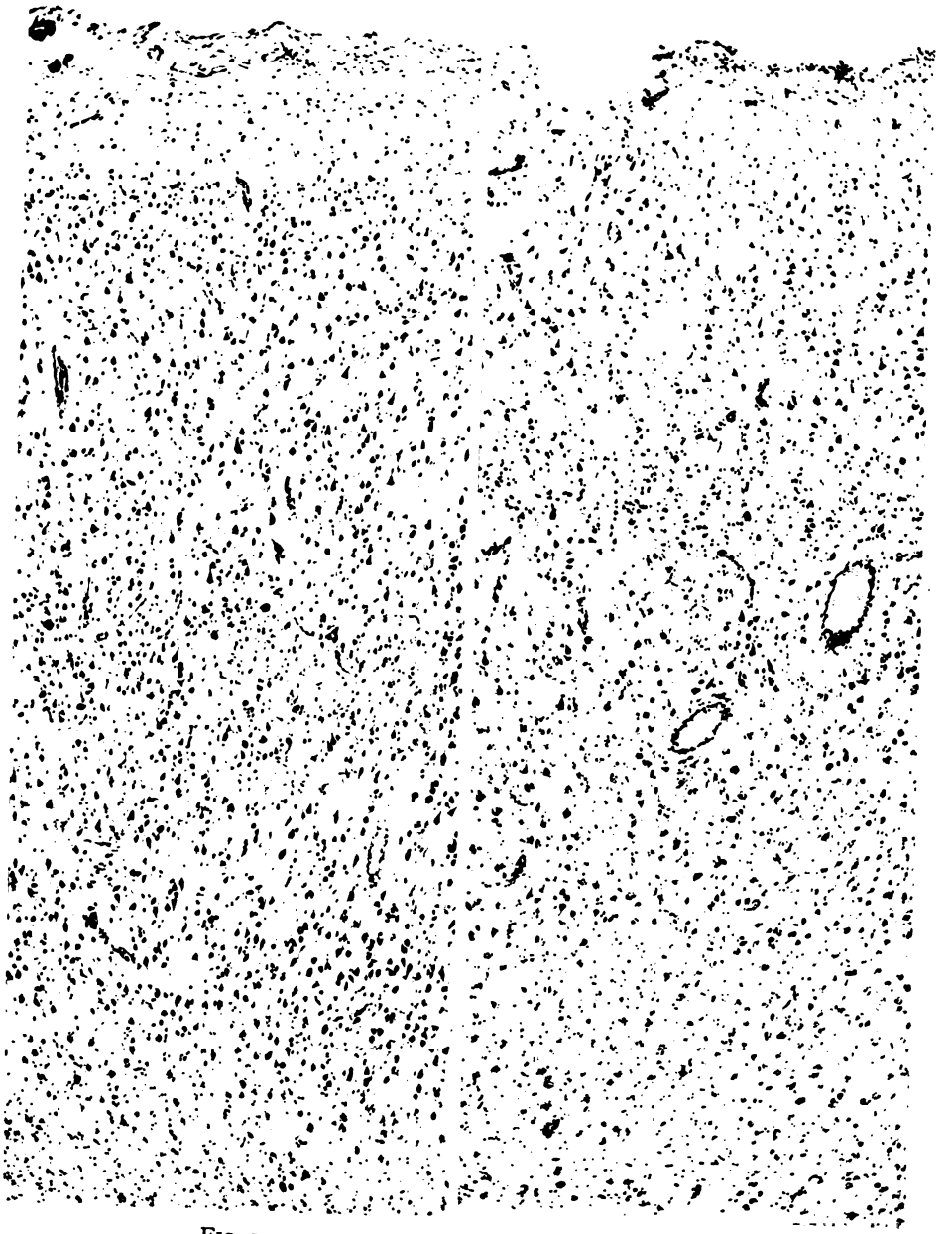

FIG. 1. FIG. 2.

PLATE VII.

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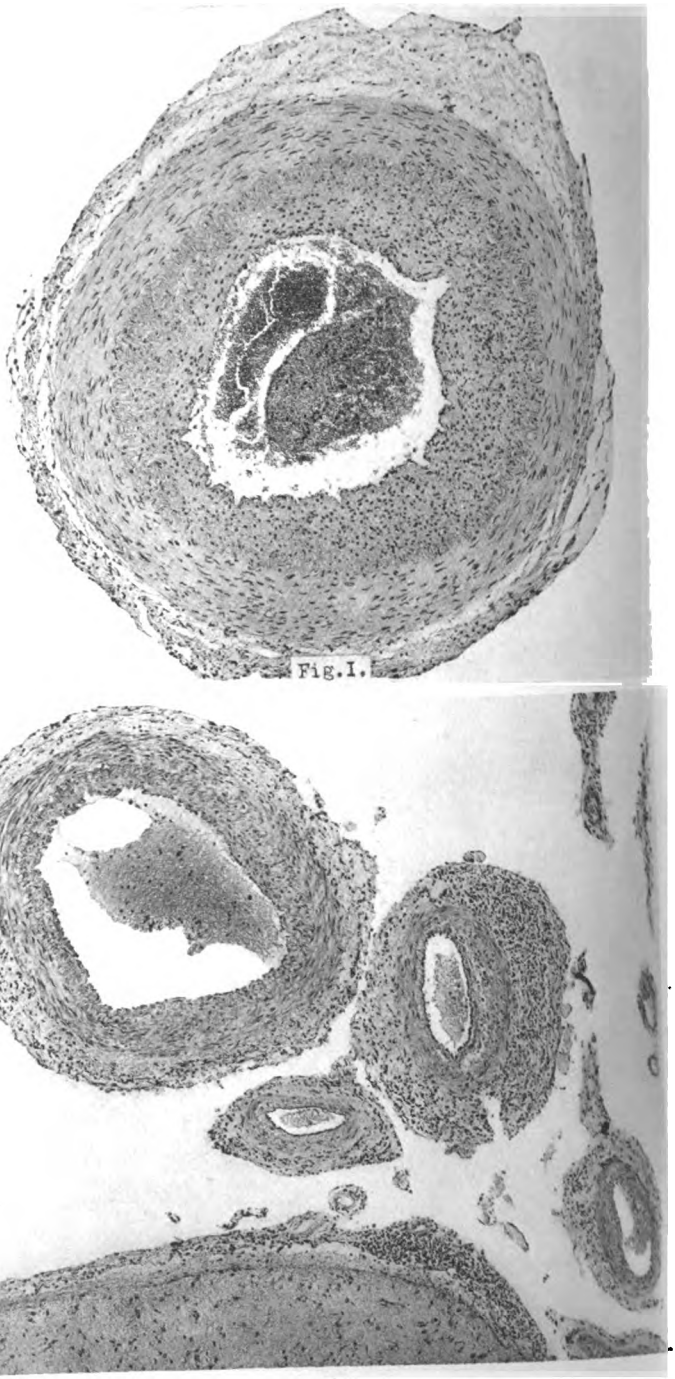

FIG. 2.

PLATE VIII.

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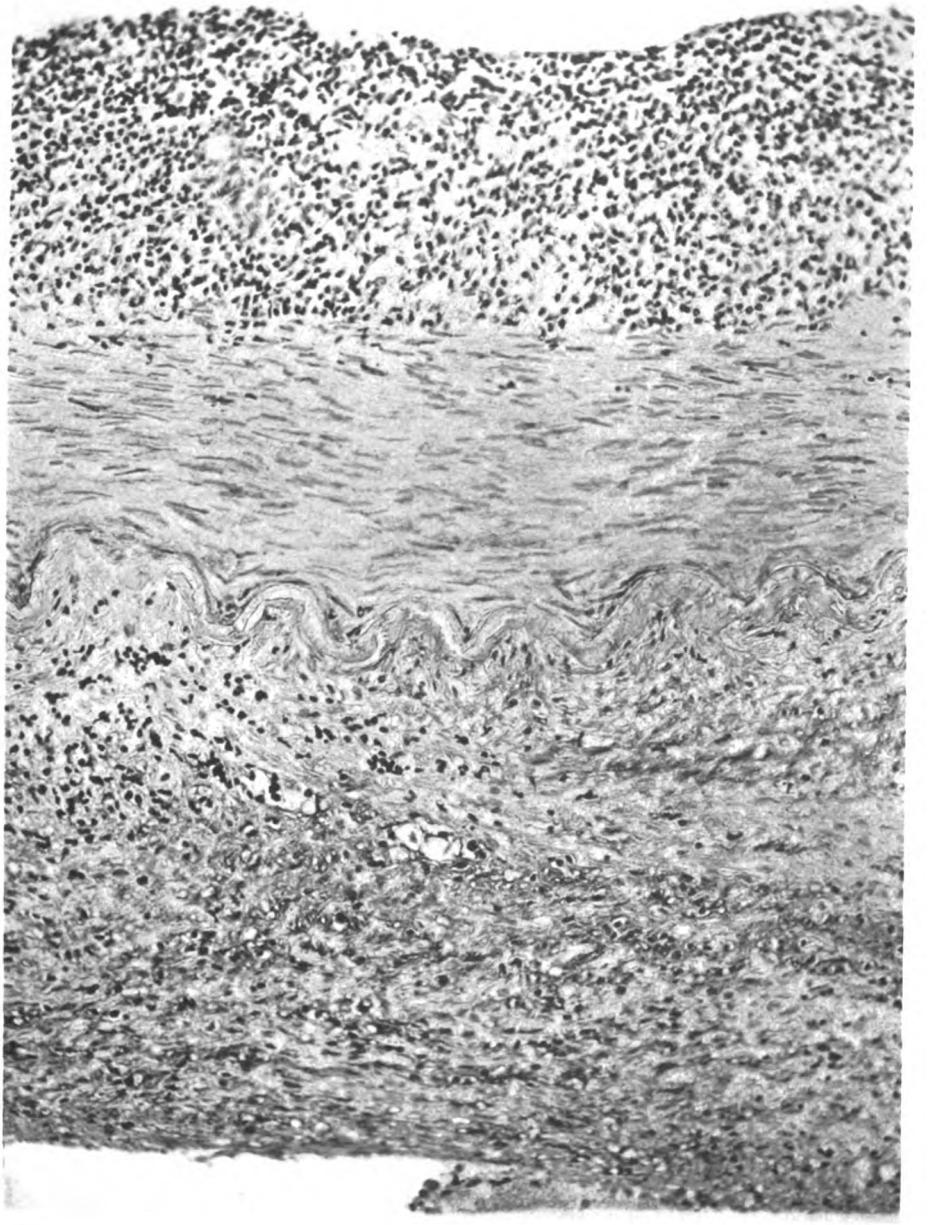

PLATE IX.

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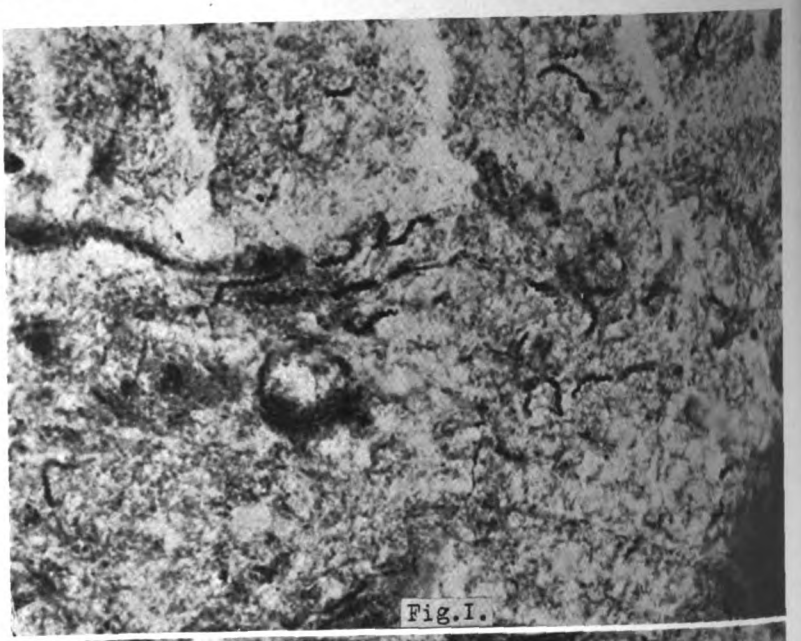

Fig. I.

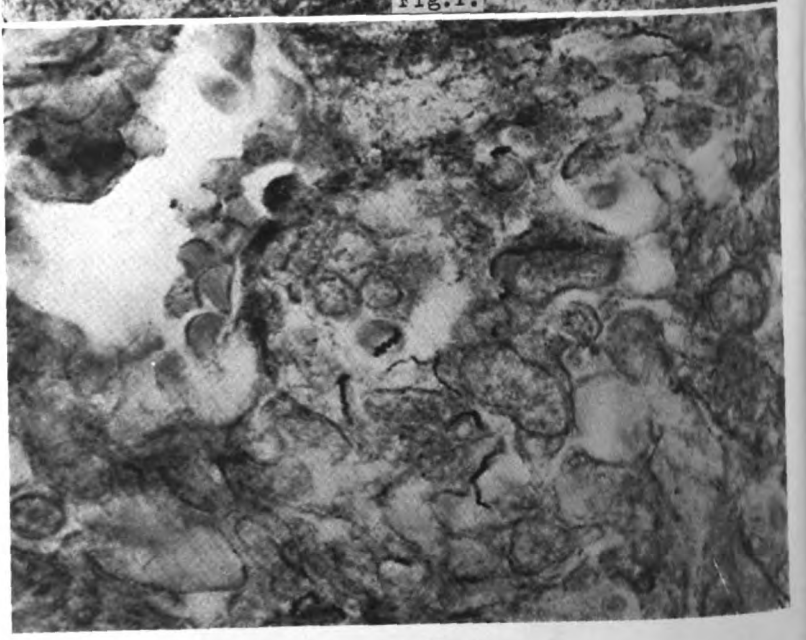

FIG. 2.

PLATE X.

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MENTAL DISORDERS AND CEREBRAL LESIONS ASSOCIATED WITH PERNICIOUS ANEMIA.*

By ALBERT MOORE BARRETT, A. B., M. D.,

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One of the most promising fields for psychiatric investigation is that of the somatic disorders which show associated mental symptoms, and in particular those which show a specific tendency towards structural involvement of the central nervous system.

The selection of these disorders will largely be determined by the material at hand.

It has seemed to us that, at least in Michigan, pernicious anemia is so frequently observed among patients in hospitals for the insane that its influence as a factor in the production of mental disorders has been underestimated. In some instances this association has been but incidental.

In the past few years we have received among some 650 autopsies upon the insane 15 cases of pernicious anemia. This may be influenced somewhat by local conditions, as, in Michigan, pernicious anemia is relatively more frequent among diseases in general than elsewhere. During recent years cases of pernicious anemia have formed somewhat more than 4% of the admissions to the medical service of the Hospital of the University of Michigan.

In the text books of internal medicine and special treatises on blood diseases it is usually mentioned that mental abnormalities may occur in pernicious anemia. In the text books of psychiatry a slight consideration is given to the etiologic importance of this disease and in a few some reference is made to clinical casuistics.

Apart from the stupor, the apathy and irritability which have most frequently caught the attention of clinicians as occurring in the more asthenic phases of the disease, there have from time to time appeared reports upon more developed mental disorders, associated with pernicious anemia.

*Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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In most of these more attention has been given to the neurologic disturbances and the cord pathology than to the mental features. The greater number of mental disorders which have been noted as symptomatic of pernicious anemia relate to the occurrence of an amentia symptom complex with delirious features, usually occurring toward the end of the disease.

It is this type of disorder which Bonhoeffer has described at some length in his recent consideration of the psychoses symptomatic of states of infection and exhaustion.

Little or no attention has been given to the fact that in this disease there not infrequently occur peculiar paranoid conditions which, in their symptomatology, show the psychogenetic influence of factors which have their basis in the situation of the patient by reason of his physical disease.

The importance of pernicious anemia for the production of characteristic lesions of the spinal cord has long been a part of our neurologic knowledge. But of its relation to the production of lesions of the substance of the brain we know little.

It would seem *a priori* that the type of lesion which is present in the cord in pernicious anemia, namely, a process which peculiarly affects fiber structures, and which has a disseminated character, might be found in the brain, but until now this has not been observed. As yet there do not exist, to our knowledge, more than a few studies of the cortex in pernicious anemia by modern cytologic methods, or observations of any definite changes in the brain except the occurrence of hemorrhages or vascular alterations. The fact that so many cases of pernicious anemia show mental abnormalities would suggest that there might be involvement of the structures of the brain.

From our own material we have been able to study clinically the mental disorders of 11 cases, and in nine of these to make a histologic study of the brain.

The symptomatology of these cases showed considerable variety. Two were cases of epilepsy; two were not to be differentiated from dementia præcox; one was a questionable manic-depressive psychosis and six presented a characteristic picture of an asthenic state in which there developed a mental disorder of a paranoid type. It is to these paranoid conditions that this study is particularly devoted.

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From our material we have selected brief accounts of six cases. The first two of these, cases 181 and 401, showed but slight tendency toward delusional elaboration. In the remaining four the paranoid features were well developed.

CASE 181.—J. W., a female, with hereditary predisposition, in that her mother was psychopathic, and an aunt and cousin had been insane.

Her condition did not attract attention until she was 48 years of age, when following the death of her husband she showed a degree of depression and worry that was of uncalled-for intensity; with this came a marked irritability. She found fault with everything that was done for her and it was impossible to satisfy her. At the age of 50 she remained in bed, complaining of being unable to work; she developed the idea that her family were against her. Her physical health had much deteriorated. At the age of 54 she came into the hospital. She was extremely anemic in appearance, the skin was yellowish and her muscular strength was greatly weakened.

There were subjective complaints of pain in the lumbar region and epigastrium, but until late in the course there were no objective disturbances of sensibility. She showed Romberg's symptom, ataxia and feebleness in her gait. The knee-jerks were barely obtainable. Examinations of the blood showed the characteristic findings of pernicious anemia. The red cells varied at different times, between 1,250,000 and 680,000 and the hæmaglobin between 40 and 15 per cent. The neurologic disturbances became progressively more marked. The knee-jerks entirely disappeared. She complained of numbness in the hands and of being unable to feel objects. On one occasion she complained of a transitory inability to see.

Mentally she at all times showed an extreme irascibility. She grasped questions clearly but fatigued easily and, losing interest, gave incorrect and careless replies. Her thought was self-centered, but much influenced by suggestion. There existed a striking disproportion between her ability to do things when not under observation and when in the presence of others.

Eleven days before death the consciousness was unclear much of the time, the speech was thick and there were many perseveratory reactions. At times she talked much in a rambling, disconnected way. She became disoriented for time and persons, miscalling those around her. An edema of the legs became marked and death occurred five months after her admission.

In this case we have developing in one who is of predisposed constitution a mild depression, with irritable mood and slight delusions of persecution; later on in the course pernicious anemia developed with neurologic symptoms referable to cord involvement. Toward the termination there occurred unclearness of comprehension, disorientation and disturbed associations.

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The cord showed a characteristic degeneration of the pernicious anemia type; in the dorsal and lateral columns were many small myelitic foci.

The cortex showed interesting pathologic changes. The nerve cells showed slight but quite distinct disintegration of the Nissl granules, usually most marked at the margin of the base of the cell and in the central region; a few cells showed the characteristic axonal type of degeneration.

The neuroglia cells were moderately increased, with a tendency to group arrangement. Not infrequently these impinged upon cells showing evidences of degeneration. Forms showing progressive types of reaction were common and in several sections a number of typical mitoses were found among the nuclei. Rod cells and cells of odd shapes were present in considerable numbers. The blood vessels showed a lack of normal sharpness of outline. The myelinated fibers immediately adjacent to the vessel were pushed apart and in the spaces were numerous homogeneous coagulated products of degeneration. Spaces in the walls of the vessels usually contained excessive deposits of pigments, giving the reaction of fat.

CASE 401.—E. K., a male, with hereditary predisposition, his sister having been regarded as a case of hystero-epilepsy and ultimately suicided.

At the age of 44 he became, following the suicide of his sister, unduly depressed, and was inactive. He spoke of everything as going to ruin, and that everyone except himself was hypnotized. In such a condition he came into the hospital. He was anemic in appearance, the skin was yellowish and the spleen enlarged. There was a mild degree of chronic nephritis. There was Romberg's symptom, unsteadiness of gait, increased knee-jerks. The blood showed 1,920,000 red cells, 40 per cent hæmoglobin and the characteristic cell findings of pernicious anemia. His mood was usually sad; he objected to eating or being fed by such phrases as "You are feeding me too much food; it is somebody else's food; I am not treating people right if I eat."

He rarely spoke spontaneously. At times he was unclear in his comprehension of his situation, and mixed up in his orientation. There was a tendency to confabulation, spoke of wishing to go out and meet some friends who had just come from the old country, at another time he became agitated by the imagined cries of a girl "who was being taken away by some fellows."

The gastric disturbances became extreme, occasionally there were attacks of dizziness. Death occurred after an entire duration of about three months.

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In this case we have developing coincidently with progressive anemia a moderate degree of depression, with inactivity and delusions of self-depreciation. There were episodes of unclear comprehension and orientation, which became more marked towards the termination of the disease, of auditory hallucinations, and a tendency to confabulation. With this there were neurologic disturbances referable to involvement of the posterior columns of the cord.

Anatomically there was present an excessive amount of lipoid pigments in the nerve cells, a slight degree of satellitosis, extreme rarefaction of the nerve fibers adjacent to the blood vessels in the white substance, and excessive accumulation of lipoid pigments in the walls of the blood vessels.

The cord showed an active degeneration in the dorsal columns, through the cervical and thoracic regions. The medulla showed, by Marchi's method, degeneration of many of the fibers passing through the raphe and of the intra-medullary portions of both hypoglossal nerves. The changes in the cortex are slight, but are distinctly pathologic. The Marchi degenerations of the medulla are of unusual interest.

In these two cases we have but a slight tendency toward delusion elaboration, the chief features of each being the asthenic condition with the terminal disturbance of the perceptions and orientation.

In a group of cases in which the paranoid character was well developed we have collected four cases. In three of these there were severe pathologic changes in the brain.

CASE 303.—A. M., a female, with predisposition, in that her father was insane.

As a child she was nervous, sensitive and shy. At the age of 34 and 37 she had attacks of what she called nervous prostration, accompanied by numbness in the arms. For some time before the age of 50, when she came into a state hospital, there had developed a change in character. There were auditory hallucinations, voices called her by name and directed her to certain passages in the Scriptures; she felt that she was led by some power, that she was to be required to write a book on Christ's redemption; that the Holy Spirit could do this through her.

Her nutrition was poor and there was a moderate degree of anemia.

Comprehension and orientation were undisturbed; she had a slight inability to recall recent experiences. She was suspicious and irritable; she spoke of being persecuted by her neighbors, and that women were jealous of her. The delusions were not extensively elaborated. There was

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slight looseness in the mental associations. Her delusions showed a tendency towards splitting of the personality, as "Two lives worked along together. I didn't eat my breakfast because it was in the past and it was hers."

One year after her admission she complained of pain in her legs. The content of her thought now largely concerned the sensory disturbances which progressively became more marked. The pain that was in her legs she believed was due to having the bed changed. The nurses were her enemies; one of them burned her hair off in the night time. Her body became filled with electricity and she complained bitterly of the treatment. A man who held a mortgage on her property was responsible for her condition.

Examinations of the blood now showed the findings of pernicious anemia. The red cells numbered 1,608,000; the hæmoglobin 60 per cent, and on some occasions there were characteristic cell findings.

Toward the end there were severe bowel disturbances; she gradually lost control of her legs and sphincters. Death occurred about two years after her admission.

The cortex showed rather widely distributed, but mild degenerative, changes in the nerve cells. In the larger pyramids of the 3d and 5th layers there were a number of cells showing the axonal type of cell change.

The neuroglia was relatively a little increased. Many nuclei were surrounded by well differentiated bodies. The nuclei were frequently grouped in small clusters. There were observed a number of instances of mitoses in the glia nuclei. There was in many places a relative increase in the number and size of the neuroglia cells around the blood vessels. Rod cells and odd shapes of cells of non-nervous nature were commonly observed.

The blood vessels showed fatty degeneration of the endothelium, and in a number of instances distinct endarteritic proliferation; in one instance nearly occluding the lumen of a medium-sized vessel. There were a number of instances of vessels which were the result of a pathologic proliferation. Most vessels contained pathologic amounts of lipoid pigments.

In the lumen of some vessels there were rarely found oval and long cells with granular cytoplasm, giving the reactions of plasma cells. These were always in the blood stream and never in the vessel lymph space.

The medulla showed a focal degeneration, with accumulation of epithelioid cells filled with fat reacting granules, occupying one

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restiform body; many fibers adjacent to this area showed degeneration by Marchi's method. The cord showed degenerations of the pernicious anemia type in dorsal, lateral and ventral columns.

The cortical findings as a whole resembled those in the first case described. The nerve cell degenerations were much the same, and there was a pathologic increase in the neuroglia. The vessels were peculiarly severely altered in this case.

Case 389.—J. S., a female, hereditary predisposition, her mother having been insane.

At about the age of 35 she developed ideas of reference, and probably auditory hallucinations; spoke of her neighbors calling her names. She led a wandering life, and some months later was confined in jail. There she was in a condition of severe motor excitement, was suspicious of the actions of those around her, and expressed delusions of persecution. This led to her commitment to a hospital for insane. Soon after her admission the excitement passed away and during a residence of 8 months her conduct was not peculiar. There were no neurologic disturbances.

She remained well for three years, when the delusions again became active. There were auditory hallucinations, especially at night, *e. g.*, the neighbors called her names; people were endeavoring to get her away so that they might obtain possession of her farm. She again came into a hospital. She was then in poor physical condition, the heart had a slight mitral lesion. There was an ulcer of one cornea. The tendon reflexes of the legs were absent. There was Romberg's symptom, staggering gait, delayed sensibility in legs and a slight articulatory speech defect. She held ideas of persecution, which were not systematized. Her memory was inaccurate and her mood one of mild apprehensiveness. There was no looseness in her thought and no disturbance of comprehension or orientation. The cerebro-spinal fluid in one examination showed no pleocytosis or increased albumen; at a subsequent examination there were 10 cells per cmm. There developed a pronounced anemia which later gave the characteristic findings of the pernicious type. The red cells numbered about 800,000; hæmoglobin 35 per cent, and the types of cells were typical of this disease.

The legs became spastic; she became less clear in her comprehension, and died about five years after the first mental symptoms developed.

The foregoing case is that of a paranoid condition developing in a woman of insane heredity. This condition was characterized by suspicions, delusions of reference and persecution; with periods of severe excitement of short duration. A more or less complete remission occurred for three years, when the delusions and hallucinations returned; these continued without systematization and there was no marked deterioration.

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There were neurologic disturbances which were referable to a lesion of the dorsal columns and, towards the last, of the lateral columns of the cord. After the mental symptoms had been in evidence for three years there developed a severe pernicious anemia and the terminal condition showed unclearness of consciousness.

The autopsy showed a depression about three-quarters of an inch in diameter in the frontal bone above each orbit and one on the right parietal eminence. The pia showed slight turbidity over the frontal region, and a recent hemorrhage above the right parietal region. The basal arteries were "soft and not tortuous."

The microscopic study showed a slight atheroma of the basilar artery.

There was a small area of superficial encephalitis in the cerebellum, involving the layers down to the white substance. This appeared as a broad area of coarse meshy structure, with an absence of nerve structures, and an increase in blood vessels and connective tissue. In this there were small hemorrhages of recent occurrence. Around the area the neuroglia showed characteristic progressive reaction changes. There was no arteriosclerosis of the pial vessels in this vicinity.

The cortex of the frontal and central regions showed very severe changes. The nerve cells for the greater part were shrunken and there was a lessened amount of Nissl granules. The glia was increased in amount. The cells were chiefly of the type having large pale nuclei, and an indistinct body filled with coarse pigment granules. They commonly lay in clusters, sometimes containing as many as eight nuclei. There were a few rod cells and other cells of a pathologic type.

The blood vessels showed striking changes. Quite generally there was an active proliferation of the intimal cells, and newly formed vessels were not infrequently observed. In some of these latter there were cells which had the appearance and staining characteristics of plasma cells. They were, however, only rarely encountered and never were found outside of the channel of the vessel.

The right anterior central region showed such changes as these, but in addition presented a broad area in which nerve cells were absent to the depth of the third layer. The area was crowded with nuclei, most of which were of neuroglia cells, and surrounding the area were neuroglia cells with large bodies, such as occur in the

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vicinity of softenings or inflammatory lesions of the cortex. There were no plasma cells found in this region. Nowhere was there any infiltration of the vessel walls.

The cord showed no meningitis or arteriosclerosis. There was an extensive degeneration of the pernicious anemia type in the dorsal columns extending from the lumbar to the cervical levels.

This was evidently one of old origin, as the area was densely filled in with neuroglia fibers and most of the fatty products of the degeneration lay outside of this area in cells crowding the vessel walls of the septa.

The lateral column showed an extensive and recent degeneration.

It is not possible to exclude the occurrence of syphilis in this case, especially as the clinical course is reviewed in the light of the anatomical findings. The occurrence of corneal ulcer during life and the presence of the bone lesions in the skull are suggestive. Of more importance is the diffuse endarteritis present in the cortex and the finding of a rare plasma cell.

The cerebro-spinal fluid was not characteristic for syphilis, and the mental symptomatology was unusual for syphilis.

The occurrence of the pernicious anemia and the characteristic spinal cord lesions of this disease make the case one of importance for consideration in this connection.

CASE 621.—J. O., a male, had a father who died from tabes, and several members of his family were psychopathic.

As a child he was neuropathic and is said to have had hydrocephalus and been backward in learning to walk. In school he was not regarded as dull. At the age of 38 he complained of pains in his back and head. He was forgetful and had difficulty in fixing his attention; he became pessimistic and melancholy and spoke of a certain passage in the Scriptures as having a special significance for himself. He became suspicious and believed that people were following him and plotting against him. He, on one occasion, became angered with some painters working in a neighboring yard and shot at them. This brought about his commitment to the state hospital. There his physical condition was not impaired but his knee-jerks were exaggerated. He had some insight into his mental condition, and spoke of his symptoms as coming on gradually during the past few years. There were periods when he became, as he said, "much confused and wandered aimlessly about." He questioned the faithfulness of his wife. He had some expansive ideas which showed in a foolish scheme for organizing some public bath-houses. At times he had auditory and visual hallucination. His retentive memory was poor and he was forced to write down particular things he wished to remember.

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His mood was generally one of mild elation. Episodes of slight confusion were occasionally noted. The delusions and hallucinations were no longer in the foreground, and after two months he returned to his home.

Five months later he voluntarily returned to the hospital, saying that for the past few weeks he had been more irritable and found it difficult to keep from getting into trouble with people who annoyed him. There had been several transitory episodes of confusion. During the following two years his condition varied, at times he would seek the hospital for treatment and then return to his home. At home he worked irregularly, in office employment he was insubordinate and a meddlesome mischief maker. He was mean and threatening toward his wife, and had no sense of moral obligations toward her or the children. He had expansive schemes which led him into foolish business ventures.

In 1907, at the age of 42, he was again in the hospital. There was nothing mentioned in his physical condition that would indicate an anemia. There was tremor of the tongue and fingers and the knee-jerks were exaggerated. There were no disturbances of sensibility. He was slow in his movements. His comprehension and orientation were undisturbed. In intellectual work he showed ordinary facility. There was a tendency to confabulation. He was still expansive in many of his ideas, proposing schemes altogether impractical. Aside from the suspicious attitude he held toward his wife there were no delusions now present.

For four years his condition continued rather stationary; the suspiciousness and expansiveness were at all times marked. His blood then gave the pathologic findings of pernicious anemia. The red cells ranged around 1,500,000, and the hæmoglobin between 45 and 50 per cent. The cell findings were characteristic.

Several remissions in the severity of the anemia occurred and with these there was always an improvement in his mental condition.

Towards the last he became edematous; he was more irritable and showed extreme defects in judgment. Death occurred nine years after the first development of the mental symptoms, and one year after the anemia became evident.

In this case we have developing in a man who was from a psychopathic family and who was himself psychopathic a marked degree of suspiciousness, irritability, auditory and visual hallucinations, mild delusions of persecution, expansive mood and extravagant ideas, with episodes of confusion, memory impairment and confabulation. The condition showed marked variability and remissions in the prominence of the symptoms. At no time was there complete recovery; eight years after the beginning a pernicious anemia made itself evident and rapidly progressed until death.

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The anatomical findings were of extreme interest, in that there were found in the cortex many focal lesions which in their histology seem to us quite the same as those which are present in the characteristic cord lesions, namely, small focal disintegrations of the myelin and an accumulation of epithelioid cells, actively phagocytic for the fatty products of the disintegration; around the area the neuroglia showed progressive reaction changes. There was no evidence of hemorrhage in any of these lesions. These varied in their appearance, as if of different ages; in some there were few epithelioid cells, but the area was densely filled in by neuroglia. The majority of these were in the white centers of the frontal convolutions. There were in addition small lesions in the deeper parts of the nerve cell layers of the cortex, which appeared as small focal areas of necrosis and accumulations of epithelioid cells. These did not seem to be associated with hemorrhage and resembled closely those found in the white substance.

Cytologic studies of the cortex showed an increase of the fibers of the marginal layer of glia, with numerous entangled coagulation products. The glia through the nerve cell layers showed a moderate relative increase, with pathologic amounts of pigment in the cell bodies. The nerve cells showed appearances which could not in the regions examined be regarded as pathologic. The blood vessels were much altered, they lacked the normal sharpness of outline; the intimal cells were often swollen and there were evidences of a mild endarteritis. The vessel walls were crowded with pathologic amounts of lipoid pigments.

The spinal cord in this case showed only one small myelitic focus present in one ventro-lateral column of a section through the upper sacral region. This was old in character, as there were few epithelioid cells present, and the area was filled in densely with neuroglia. Sections from other regions showed no degeneration whatever.

CASE C. G.—The antecedent family history is unknown. He was of moderate alcoholic habits.

At the age of 46 he suffered much from gastric disturbances and soon became very anemic. He became irritable and suspicious and accused his physicians of giving him medicine to cause his blood to dry up.

Shortly after the onset of the first mental symptoms he came into a hospital for the insane.

There he showed extreme paleness with yellowish skin, and extreme gastric tenderness.

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The knee-jerks were absent, and the arm reflexes exaggerated. He complained of feelings of numbness in his legs but objectively there was no abnormal reaction to tests for sensibility. The blood showed a severe anemia.

He was clear in his comprehension and orientation. He expressed delusions of suspicion and persecution, as "He was the victim of a conspiracy which had forced him into the hospital; a relative had influenced the physicians to drug him; his wife had changed in her attitude towards him and he accused her of putting poison in his food to get him out of the way." These ideas were not much systematized and were not firmly fixed, as he expressed it, "It seems as if this is so but I have no proof of it."

His gastric distress he knew was due to a cancer of the stomach and believed that he should be operated upon. There was a slight degree of expansiveness present. He believed that he should have a degree of attention not shown to others. A blood examination showed 717,600 red cells and 20 per cent of hæmoglobin.

He refused to take his medicine, as he believed it was poison; an evidence of poisoning was that his bowels had moved after receiving a laxative. After he drank a glass of milk he had cramps from the poison that had been given in the milk.

There were auditory hallucinations: people on the ward said that "he would be better off if he were out of the way. The attendants said that they would fix him; voices outside of the building said we will do him, we will get him, we'll poison him." He refused to eat because of poison being placed in his food; he knew it was there because he could taste it.

The anemia and emaciation became extreme. There developed a severe diarrhoea with slight elevations of temperature. The delusions and hallucinations were present up to the end which came about five months after the onset of the mental symptoms.

It is to be regretted that the brain of this case was not available for study.

The cord showed an extensive and active degeneration of the dorsal, lateral and ventral columns.

The case shows the development of a paranoid condition, developing at about the same time as the anemia. There was an extreme irritability, suspiciousness, auditory hallucinations, delusions of reference and persecution. These were without marked systematization. The entire course was rapidly progressive.

In addition to the six cases whose course we have been able to follow to the end, we have been able to study two others from the Department of Internal Medicine in which the symptomatology showed many resemblances.

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The cases, as a whole, have in common an irritability, and a suspiciousness which forms the ground on which develop the delusions of persecution. The content of the delusions is usually influenced by the somatic-neurologic symptoms and the situation in which the patient is placed as a result of these disturbances. In some instances there were auditory hallucinations to which the patient reacted with strong affect. In several cases there was confabulation, which suggested that seen in the Korsakow's symptom complex.

There was no marked deterioration present, the comprehension and orientation were usually clear, except for rare episodes, in which they were slightly disturbed. In two instances the mood was slightly expansive.

In a number of instances the course showed remission in the intensity of the symptoms and these corresponded to the remissions in the physical conditions. Underlying the development of the mental condition in all but one of these cases was a hereditary predisposition. In several instances there were a number of occurrences of mental abnormalities or insanity among the ancestors. In all cases of pernicious anemia with mental disorders that we have studied hereditary factors were found in the greater number.

As to the clinical position of these cases it would seem that they must be placed among the paranoid conditions which are symptomatic of a toxic-organic process affecting the central nervous system—analogous to the paranoid conditions which have been noted in tabes, alcoholism, and from certain drugs.

The study of the cortex in nine cases of mental disorder, in which pernicious anemia was found, showed distinct pathologic findings in eight. The structural changes were diffusely distributed, but in some instances showed greater focal intensity. The nerve cells were of normal appearance in only one instance. They were slightly altered in three and of more severe degree in four cases. In most instances the changes were moderate fatty degeneration, with disintegration of the chromophilic substance of the cell. In two instances the cells showed a reaction which follows an injury to its peripheral fiber process.

The neuroglia in most instances showed a diffuse increase, usually slight, but in two decidedly marked. The type of change was that of a moderate development of a cell body and the inclusion

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of an unusual amount of disintegration products. The activity of the growth is evidenced by the occurrence in two cases of nuclei in mitosis and in the collection of nuclei in groups.

In addition there were in some instances abnormal types of cells which we are accustomed to regard as evidence of pathologic change in the interstitial elements.

The most constant alterations were in the blood vessels, which in most instances showed swelling of the intimal cells and in some active proliferative changes. Quite generally there were excessive amounts of disintegration products crowded in among the cells of the walls or immediately adjacent. These cell products gave reactions of fat and the amount of this was in direct relation to the severity of the changes in glia and nerve elements. In three cases there were recent focal hemorrhages.

Perhaps the most important findings in the present study are the focal lesions, which correspond in a very close degree to the lesion so characteristically present in the cord. (Figs. 1, 2, 3, 4.) These were found in three cases: once in a case of paranoid condition of six years' duration; once in a condition not to be differentiated from the depressed phase of manic-depressive insanity, and once in a case of mental deterioration of some 21 years' duration. These lesions in two instances only involved the white substance of the convolution and once both white and gray substance. The occurrence of lesions in any area of gray is very unusual in pernicious anemia. In this case they lay deep in the cortex where the myelinated fibers were abundant.

The occurrence of degenerations in the medulla was noticed in four of five cases studied. In two instances there were found focal myelitic degenerations and in two characteristic Marchi degenerations of the fibers of the intra-medullary part of the hypoglossal nerve and in one of these also the fiber passing into the raphe.

The changes, as a whole, are not of a specific type, but rather those which occur in conditions of chronic intoxication, and resemble those found in chronic alcoholism, namely, the occurrence of increased lipoid products in cells, glia overgrowth, vessel changes, miliary hemorrhages, and intra-medullary fiber degeneration.

The similarity to a toxic type is further shown in the axonal type of reaction which was found in two instances, a change which has

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often been noticed in the Korsakow's symptom complex and various forms of toxic neuritic disorders. As in toxic processes the vessels are severely affected.

Clinically there are features in these paranoid cases which resemble closely those seen in chronic and subacute toxic conditions, especially the chronic alcoholic delusional states. These are the occurrence of the suspiciousness and irritability, the development of the delusions of persecution, the auditory hallucinations and occasional memory impairment and confabulation.

The cases apart from this paranoid group are difficult to interpret, as to the etiologic influences of the pernicious anemia, and whether or not the occurrence of pernicious anemia is anything more than incidental cannot be determined. They are, however, of importance in showing that the associated pathologic process was not one characteristic for any specific psychosis, while in some instances the anatomic lesion was of a characteristic pernicious anemic type.

In conclusion, it has been shown, first, that mental diseases may occur associated with pernicious anemia, which seem to be of more than incidental importance, and that these are not always of the usually described amentia type, but are more chronic and show resemblance to mental disorders symptomatic of toxic conditions.

Second, that pernicious anemia may be associated with pathologic changes in the cortex of the brain, which in their finer aspects are such as have been observed in mental disorders associated with toxic influences, and in addition specific lesions which resemble those occurring in the cord in pernicious anemia.

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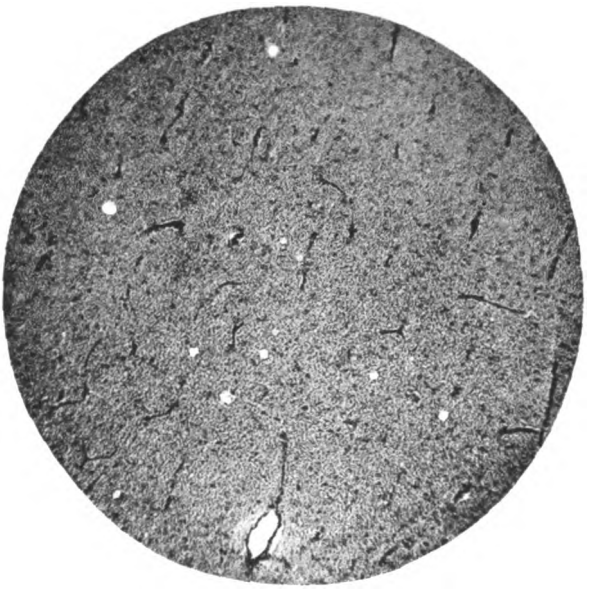

FIG. 1.—Pernicious Anemia: Multiple focal degeneration in subcortical white substance. Case 621. Van Gieson stain. Mag. 75.

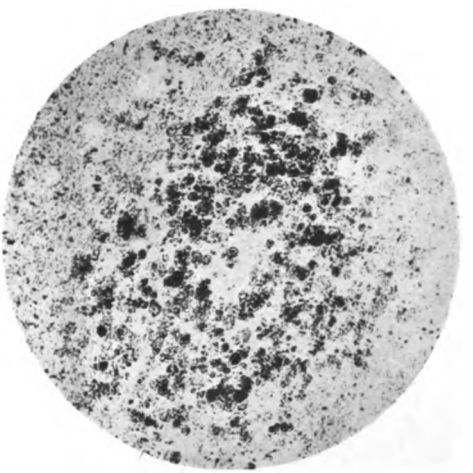

FIG. 2.—Pernicious Anemia: Focal area of fatty degeneration in subcortical white substance. Case 648. Herxheimer stain. Mag. 300.

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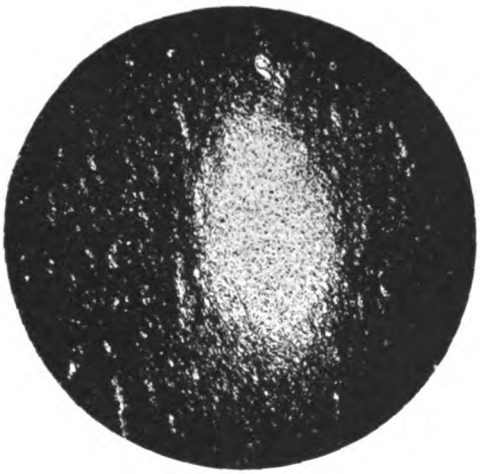

FIG. 3.—Pernicious Anemia: Focus of fibre degeneration and nuclear increase, in central white substance. Case 621. Pal-Weigert stain. Mag. 75.

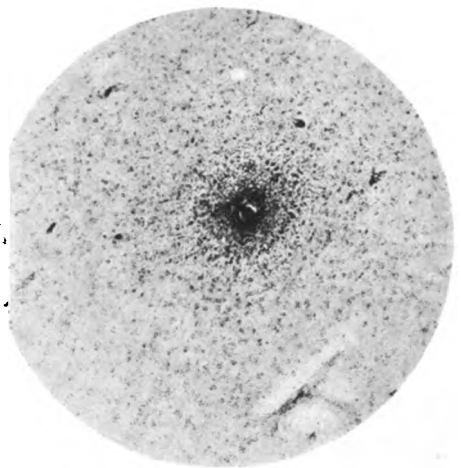

FIG. 4.—Pernicious Anemia: Perivascular nuclear increase in subcortical white substance. Case 621. Van Gieson stain. Mag. 75.

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CLOSING REMARKS.*

By ADOLF MEYER.

My first thought in these my closing remarks of this memorable celebration is that of gratitude towards the man who made it possible for us to be here. The next thought is that of gratitude to you who have honored us with your presence and your discussions, some of you with great sacrifice of time and sacrifice on the part of your patients and your work. The dominant thought is and will always be how to make it as certain as possible that the activity of this clinic, so auspiciously inaugurated, shall grow and bring its best fruit in the great cause of mental health work.

The discussions of these three days were so planned as to give an expression of the leading principle for which this clinic is to stand. Instead of a series of eloquent orations on insanity and its study and treatment, we have heard a series of very concrete reports of intensive work and eloquent *facts*, indicative of the many lines of closely integrated issues and reactions we have to study and to learn to master. We find in the first place the general medical foundations as brought out by the studies of Dr. Cushing, Dr. Barrett, Dr. Dunlap and Dr. Rossi, and also by Dr. MacDougall; groups of facts and coordinations of inductions from neurology, and the various integrative factors of the nervous system; from the nervous system under the guidance or misguidance of the internal secretions, or under the effects of *diseases* of the internal organs as in pernicious anæmia and in the great nutrition disease pellagra, or under the influence of the minute *parasites* which continue to thrive because of our sham-morality and unwillingness to meet the sexual problem in the open. I say these lines were eloquent assertions of the share of general medicine in psychiatry, and their very extent shows how unlikely it is that we should ever come to distinguish sharply between a mind and body in our field, because after all, we face one large biological problem, the disorders and actual diseases of biological organisms and of

* Address delivered at the opening exercises of the Henry Phipps Psychiatric Clinic, The Johns Hopkins Hospital, Baltimore, Md., April 16-18, 1913.

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groups of organisms; and every one of the topics had to climb the ladder from the nerve-cells and tissue-cells to the reactions of the *individual as a whole,* which, for practical reasons, we call our mental life. It is therefore not in the spirit of a very great contrast, but of a sense of order, that I speak of a second line of eloquent orations, not of word only, but of facts worth assimilating and heeding, when I refer to a *second domain* we had before us: the more essentially *psychological level* which, in a way, takes the general medical foundations for granted, and turns directly to the reactions of the organism as a whole; a world of fact so rich in problems that it would be stultifying if we had to keep in evidence the details of histology and anatomy and general medicine except when we come to analyze special problems in the quest of detail interpretation, as Professor MacDougall has done, or in the quest of new *facts* in the great world of Nature's experiments, as was done by the workers mentioned in the first group of communications. Nothing could more fully than Professor Bleuler's address show what a broadening function psychology has developed in our field; a function of rich amplifications of facts and a mustering of these facts not as tin-soldiers of speculation, but as a big, pulsating and real live world which we must face and handle and which brings us new helps. Within this specialized level of integrations Dr. Wells has led us into the laboratory of scrupulously painstaking observation and discrimination. Professor Heilbronner has taken us over the most important ground of the estimate of the assets of our patients in states of dementia. Dr. Hoch has grouped types of assets in personalities and their relation to disease-groups and has thus led over to a *third chapter* or point of view, that of nosology and the intellectual and methodical apparatus of psychiatric discriminations of disease, *the organized apparatus of so-called "diagnosis"*: that form of reasoning still peculiar to medicine, under which the physician's logic has worked exclusively until a functional and experimental pathology made medical functions less and less mystical and less and less the product of guess and intuition, which used to be and still so often is sanctioned by the big word "diagnosis."

Professor Jones and Professor Kirby have given us vistas of how to keep order among the facts without neglect of the reconstructive methods. They give us excellent glimpses into the ways

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of interrelation of the descriptive and analytical helps of interpretation and of mustering our facts so as to use them for action rather than for mere labelling.

Dr. Mott has taken us into a further field, viz.: the workshop of the great biological problems of heredity, and we shall briefly touch later still another field, that of the ramifications into the practical life in school, social work and the problems of the court, a line for which I had hoped to obtain a report from another European representative, who, however, could not accept our invitation.

Looking over this array of highly appreciated contributions and the wide range of suggestions emanating from them you will agree with me that there is no field so much in need of a firm anchoring in specific concrete work as psychiatry, but also no field so much in need of a broad grasp with *plastic principles,* which guarantee an *open mind* and *yet* firmness and decision of action and of interests.

There is no field which must aim at having as great a variety of temperaments among its corps of workers and at the same time a most judicious *balance* of diversity and specialization on the one hand and sane and broad common-sense principles on the other.

There is no field in which more people have thought they can solve all the problems by imagination and reiteration of hackneyed generalities, and no field in which the products of mere imagination, even of the best guessers, falls more hopelessly short of the reality. Psychiatry is a wide range of methods and problems of work to be *performed* and as little to be exhausted by talking as surgery or obstetrics or pathological anatomy. But the field is not simple. It appears vague to one who does not work in it, and an easy way to pass over what is difficult is often enough indifference or a derogatory remark about the methods and the field as a whole.

It may be that in psychiatry we shall always need to deal with matters which require an infinite amount of patience and of willingness to put up with far more relativity of results than most of the other domains of medicine. There might be something discouraging in this, but only to the lazy or to the one who believes in the false prophets of exclusive absolutism and cut-and-dried doctrines. Surgery requires its special temperaments, so does obstetrics and internal medicine; and certainly also psychopathology. But it is not merely an issue of temperament and personal capacities. The

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last decade has also brought more concrete methods and objective facts within the reach of all than any previous period of psychiatry. Indeed, I feel that before long few physicians and students will escape the fascinating influence of the growing definiteness of the theoretical and practical problems which characterize the present phase of our science with its sane appeal to a broadened common-sense and more and more concrete points of attack.

There will in every class be students who want to take up the special kinds of problems and surely they cannot find a richer and more fascinating domain. I certainly venture to predict that, just as two or three decades ago neurology was the center of fascinating systematization, attracting some of the best minds of medicine, so this assertion in a fresh conception of the neurology of the highest integrative functions and the most vital business of man, to attend to the most efficient working of the functions of conduct and behavior and the mental adjustments, will attract a remarkable group of workers.

The recent observation of Noguchi, which at last brings an active, live element, the spirochætes, into the center of general paralysis work, is a good instance of what is likely to happen. A fresh stab by an experimental worker helps us over a certain staleness of interest and a new chain of problems arises which no doubt will demand part of that patience which comes with the study of the long-drawn-out diseases. In a zigzag line of give and take we shall work along. To be able to grasp fixed points or crystallizing material in this fluid mass of facts will forever mark the pathfinder. May we hope that more and more of us may lay our hands on *more* than descriptive material; cull out some salient factors, perhaps more definite than disorders of internal secretions or either "habit" or "complex," the combinations of the two in some special disorders, or newly conceived dynamic units—and we shall have more and more valuable lines for the analytical and constructive work which constitutes true pathology.

When we take into consideration the ramifications of psychiatry into the schools, social work and the problems of legal conduct we may realize that indeed psychiatry is expected to bring a most important contribution to the rounding off of a medical education and to the very foundations of general culture.

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Looking back over 20 years of work I feel that the first task, that of attaining sufficient average standards of psychiatric work, has been fairly well achieved. The next ten years will no doubt bring a further organization of standards, but mainly incidental to the development of much more clearly defined lines of specific issues.

The distinctive trend of American psychiatry lies in the sober attitude towards systematic nosology, and in the greater emphasis with which the practical aims are pushed into the foreground. It presents an essentially pragmatic attitude in the scientific program as well as in the vigorous effort at a practical and scientific understanding of the individual case. The whole fabric of social, civic and medical and scientific organization around us is characteristically freer than that of the old world, no doubt with many a drawback, but alive with opportunities peculiar to this country.

American psychiatry on the surface looks like reflections of the various promising movements of the most varied parts of the globe, yet without any sense for binding allegiance. One with even a superficial familiarity with its work readily sees the dominance of a fundamental confidence in common-sense and self-reliance, almost crushed out in many foreign schools.

Concisely put American psychiatry of the last ten years has clearly branched off from the descriptions and mere claims of analogies with aphasia or general paralysis, and from the faith in a quasi-exclusive salvation in pathological anatomy and nosology. It has assumed the justification of dynamic conceptions even in the mental life. It has reintegrated what was arbitrarily and scholastically split under the emphasis of psychophysical parallelism; it has described some of the mental disorders in terms of habit and instinct disorganizations and instinct conflicts. It first pinned down the habit tendencies and their disorders; then it gave due attention to the experiences which shape habits and trends. About that time a most helpful concreteness was brought in in the recognition of the so-called complexes of the Zurich school, and the formulation of certain concepts of Freud's studies (wishfulfilment and repression); and the next step was the assimilation of the nature and import of symbolic mentation. We may lay claims to a fairly broad capacity for readjustments in this rapidly-growing development, if you consider that, over the general tendency in

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favor of psychogenic interpretation, the histopathology of the nervous system and the studies of internal secretions and the chemistry of the brain and experimental pathology in the sense of the Hodge-Crile school have been far from being neglected.

A country in which the so-called "brain-spot theory" and the "mind-twist theory" can coexist each for what it is worth in the concrete case at the moment, or in special types of work; a country in which an anatomical, a functional, and a more or less psychodynamic standpoint are represented under nearly every roof in active hospital work; a country in which apparent aversion to the excessive social organization of the old world has forced the call for some of the best efforts at *practical* social work—such a country has its own possibilities, its own pitfalls, and in the main a vigorous optimism and yet a keen eye for mere sham-display. What other country could give us the peculiar gushes of independence and determined and energetic practical experiments so characteristic in the Jamesian emancipation in psychology, in Watson's appeal for the behaviorist's standpoint, in the eugenics movements of Davenport and Goddard, in the mechanistic formulations of Loeb and Herter, and in the equally strong *functionalism* in our own field?

The freedom and latitude of our methods naturally involve also very great risks. There is not among us the in many ways admirable discipline which turns out the stately numbers of Schülerarbeiten and dissertations, and papers for habilitation. The tendency is in the direction of more or less well-circumscribed issues, pushed with a great deal of free energy. Men of encyclopædic knowledge and capacity are and will be rare; but schools with many-sided representations of work will have to take their place. The American preparatory college, if any educational institution on earth, deserves the connotation of the Greek word for school; it is a place where leisure in the best sense of the word is considered a virtue—the training for the *proper* kind of leisure on the one hand, and the training for the concrete duties and an aversion against feeling too closely wedded to any single pursuit.

These are sound Anglo-Saxon and American characteristics which will be bound to find their rewards and returns in this marvelous boiling-pot of nationalities. Safer grounding in the fundamentals without excessive grind, mastery without iron-cast

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frames, less and less even of the hide-bound, and a wholesome amount of the right type of active leisure—these are conditions for which we look. Safety in a firm and reasonable grasp of actual resources of experimental work with a sufficient systematization of the best available knowledge in each fundamental science will do more than the sham perfection of examinations aimed at in the passing scholastic ideals. Our growth will depend on the cultivation and proper organization of leisure and on the practical contact with the many chances for work and experience.

Psychiatry in this country has a wonderful field important not only to the victim of disease but to all thoughtful people. It will have to furnish many facts for the experience on which we can build the elements of real culture. As soon as psychiatry enters upon the disorders below the arbitrary level of declared insanity; as soon as it pays attention to what has quite unnecessarily been left to untrained teachers; as soon as we become helpful in schools, in teaching how to shape mental life effectively, how to make the most of an individual's endowment instead of destroying much by attempting the impossible; as soon as we make our field a matter of obligatory study to the psychologist and create outlooks on the cultural benefits of psychiatry, the world will find psychiatry less like an initiation into a dark corner of human life, but more and more a broadener of common sense.

Mr. Phipps has given us a wonderful start for the development of a nucleus of concrete work. Even the physical construction of the building expresses the recognition of a diversity of fields: the outpatient department with the social work; the clinical services with their subdivisions suited for a wide range of conditions; the department of internal medicine with its laboratory; the future departments of neuropathology and psychology. Work with the local physicians, the special institutions in the state, the schools, social workers, and the courts of definite districts must round off the field on which we want to carry on work, forming a worthy ground of practice and assimilation for student and postgraduate student, and the only fit basis of research. Work on cases with mental disorders demands a willingness to consider many aspects, and this means a training in practical and intellectual discipline, such as is required by few other branches of medicine, to consider complexity and yet to do justice to the integrated parts and vice versa.

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This is the simple practical ground on which we launch our work. Mr. Grosvenor Atterbury, an excellent and resourceful architect, Dr. Winford Smith, a most helpful co-worker in the administrative organization, Miss Taylor, the untiring organizer of the nursing work and of the housekeeping, and the unfailing help of many friends and associates, have made it possible to give shape to what I trust is good elemental autistic thinking adapted to reality.

I have not realized until these days of the opening how strongly I feel that at last another vital step, not merely in my career, but in my hopes for psychiatry, is achieved. The work of preparation and the many matters of solicitude in the shaping of the responsible task, the apparent impossibility to bring home some of the actual needs of such an institution, the many uncertainties and the stern necessities of adaptation at every step, all that kept one wrapped up as the forest does as one climbs through the dense woods of a mountain slope until all of a sudden one reaches a fine open cliff on a height with a chance to look over the plains and the slopes conquered, and a usually very deceptive view of the heights yet to be climbed. A moment's rest and again one delves into the woods on and up, until the camping ground is reached, to prepare for the further climbs.

There are many parallels in this simile. The climber sees ahead through the bush; he thinks he sees a top only to see another one beyond. Who has not had the experience? And who does not know the sensation of eagerness to conquer and the unbearableness of having to camp before the goal is reached?

To-day we have reached a camp, not to rest but to work with all our energy, to recruit a body of workers, to convince those on whom we depend that our ideals were capable of taking good shape in the world of reality, and to make more people yearn and work for that which has been growing slowly and safely and will, I hope, never cease growing.

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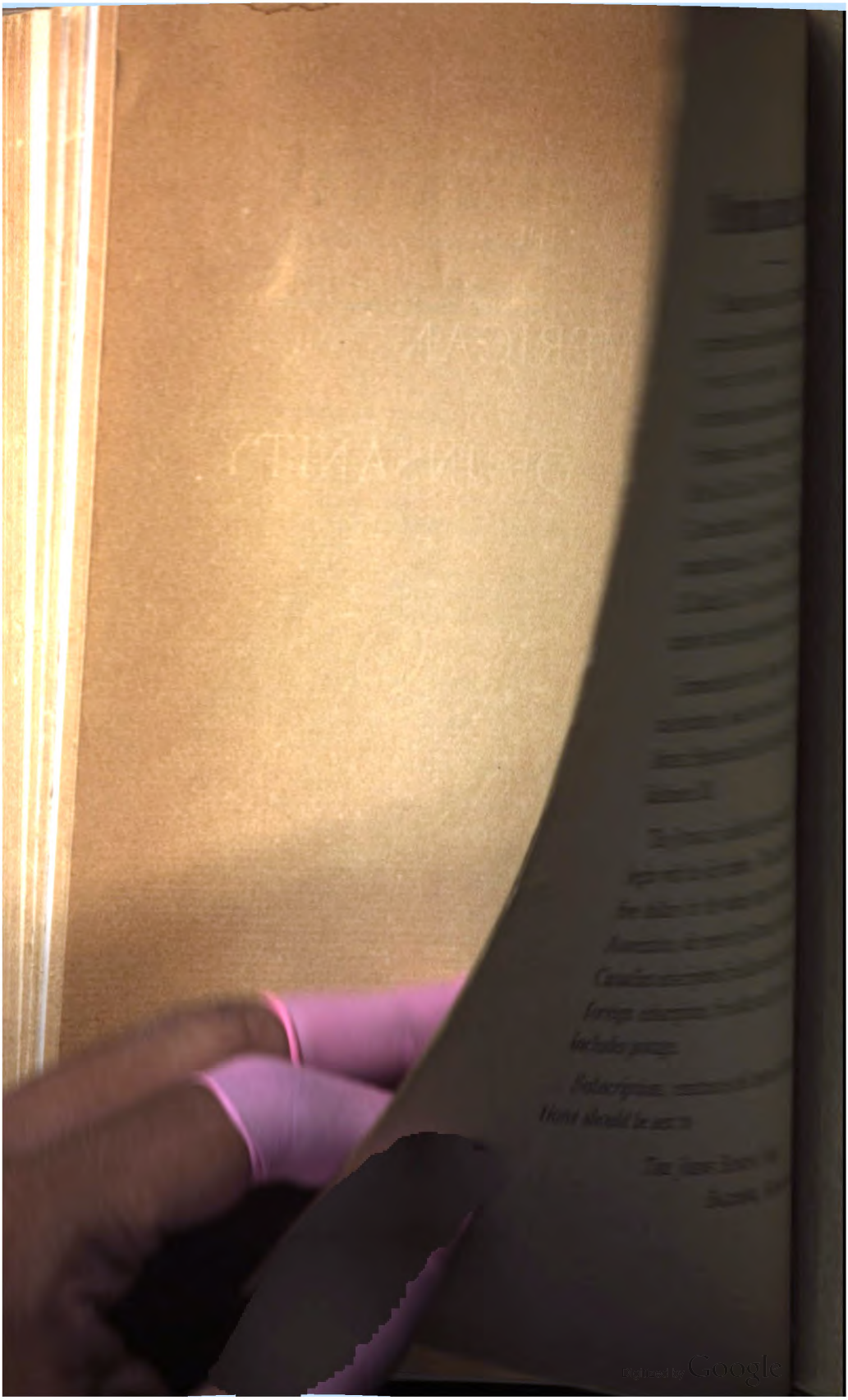

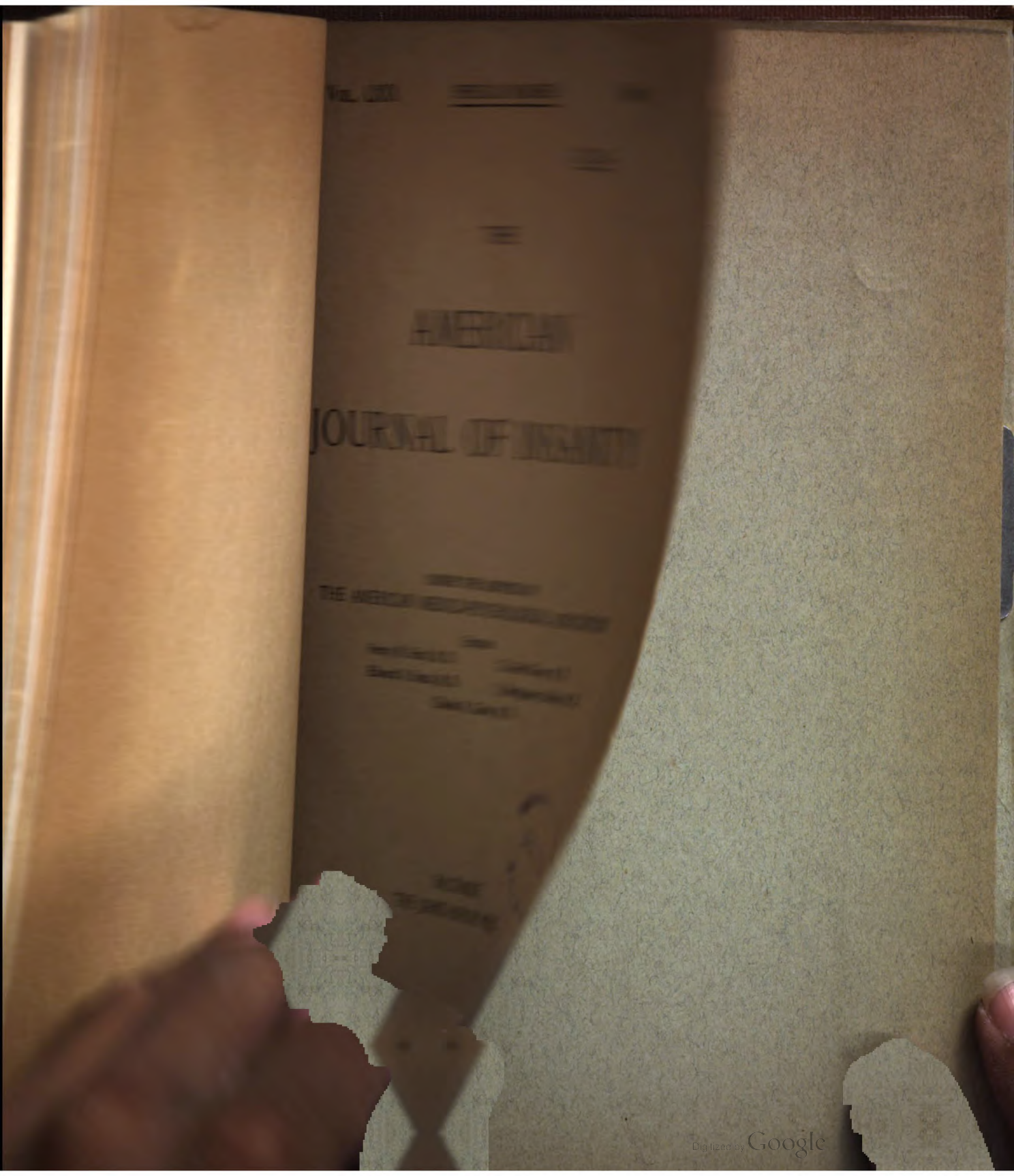
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